



Appendices

FOR

CONTRACT PACKAGE 5 – RETURN FLOW PIPELINE

Appendix Book

**Greeley and Hansen LLC
741 North Grand Avenue, Suite 308
Waukesha, Wisconsin 53186**

May 2019
90% Submittal Documents

(NO TEXT FOR THIS PAGE)

WAUKESHA WATER UTILITY
GREAT LAKES WATER SUPPLY PROGRAM

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APPENDICES

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*Not included in the 90% submittal.

Appendix I

4-230 D2 Phase II Environmental Site Assessment
Report – Site 12.17 – 2000 South West Avenue,
Waukesha, Wisconsin

(NO TEXT FOR THIS PAGE)



January 2, 2019

Mr. Craig Bayerl
City of Waukesha
130 Delafield Street
Waukesha, WI 53188

Subject: Approval to Manage Contaminated Material under Wis. Admin. Code § NR718.12
Site 12.17, portion of South West Avenue adjacent to 2000 South West Avenue, Waukesha, WI
DNR BRRTS Activity #(s): 02-68-554922, 02-68-552746, and 07-68-580851
FID #: 268354570; 268005100

Dear Mr. Bayerl:

On November 21, 2018, Donna Volk of Ramboll US Corporation (Ramboll) submitted the "4-230 D2 Phase II Environmental Site Assessment Report" (Report). The Report describes the soil sampling activities conducted to determine if contamination identified within 2000 South West Avenue property is also present within the adjacent South West Avenue right-of-way (ROW). Sampling confirmed that soil within the ROW between the ground surface and 5 feet below ground surface is contaminated with PAHs. The Phase II ESA proposed replacing soil excavated from these depths excavated within this portion of the ROW back within the same portion of the ROW in accordance with Wis. Admin. Code § NR 718.12. An estimated 1,350 cubic yards of contaminated soil is proposed to be managed in this manner.

Wis. Admin. Code § NR 718.12 Exemption

This letter grants an exemption from the solid waste requirements in Wis. Stats. § 289 and Wis. Admin. Code §§ NR 500 to NR 538 for the proposed material management activities. Approval of the exemption is based on the following:

- 1) Managing contaminated soil in the area identified on Figure No. 3 of the Phase II ESA will meet the locational criteria listed under Wis. Admin. Code § NR 718.12(1)(c), with the exception that a portion of the material will be placed within 3 feet of the high groundwater level. In consideration that contaminant concentrations do not exceed protection of groundwater residual contaminant levels, soil in the vicinity of the project are low permeability, and the reuse of the material will not change the extent of contamination, the DNR grants an exemption to the location criteria of Wis. Admin. Code § 718.12 (1)(c)5.
- 2) Soil samples have been collected for analysis of contaminants previously detected or expected to be present at the adjacent site including VOCs, PAHs, and RCRA 8 metals, and from areas most likely to contain residual contamination. Based on an estimated volume of 1,350 cubic yards of material, and a sampling frequency of 1 sample per 225 cubic yards, the sampling protocol described in Wis. Admin. Code § NR 718.12(1)(e) has not been met. However, as sample results indicate that the contamination is generally consistent throughout corridor, significantly different contaminants are not expected to be present, and that excavated soil will be reused in the vicinity of where it was excavated from or disposed at a licensed facility, the material has been adequately characterized.

- 3) A complete soil management plan, as defined by Wis. Admin. Code §§ NR 718.12(2)(b) and (c), has been provided to the DNR.
- 4) Per Wis. Admin. Code § NR 718.12(2), the DNR was provided with at least 7 days' notice prior to commencing to proposed material management.
- 5) The proposed management of contaminated material at the Site 12.17 is expected to meet the criteria of Wis. Admin. Code §§ NR 726.13(1)(b)1 to 5.

Other Information

- 1) Any hazardous substance discharge discovered during material management activities must be reported to the DNR following the requirements of Wis. Admin. Code § NR 706.
- 2) Documentation describing how soil was managed in this portion of the project, as required by Wis. Admin. Code § NR 724.15(3), must be provided within 60 days of the completion of soil management activities.
- 3) Any contaminated material that is excavated or otherwise disturbed during this project, not covered under this or another exemption, must be managed in compliance with the requirements of Wis. Admin. Code §§ NR 500 through NR 538, the solid waste rules administered by the DNR's Waste and Materials Management Program. Managing waste in a way that does not comply with these rules may be considered to have caused a hazardous substance discharge that would be required to be addressed following the process outlined in Wis. Admin. Code §§ NR 700 to NR 750.
- 4) The Great Water Alliance is responsible for obtaining any local, federal, or other applicable state permits to carry out the project.

Soil contamination in this portion of the project has been attributed to the use of asphalt and sealing tars used for road construction and the reworking of contaminated soil within the right of way. Contaminant concentrations detected in soil samples collected at this site suggest that at least a portion of the material that will be excavated may be managed as exempt soil as outlined in "Exempt Soil Management: A Self-Implementing Option for Soil Excavated During a Response Action under Wis. Admin. Code chs. NR 700 through NR 750" (DNR guidance RR-103, finalized after this request was received). Soil excavated from outside of the limits of the site may have more significant concentrations of contaminants that would not allow it to be managed as exempt. The DNR recommends that if similarly impacted material is discovered outside of the limits of Site 12.17 that precautions are made to ensure the material is managed appropriately after being excavated. Suitable management strategies for the material would be to reuse it within the right of way. Unless contaminated soil is expected to meet the definition of exempt waste, it cannot be managed outside of a right of way or at a facility licensed to accept that material without prior DNR approval. It is ultimately your responsibility to determine whether non-exempt waste will be generated during this construction project and how it will be managed.

We appreciate your efforts to protect the environment at this site. Please contact me, the DNR project manager, if you have any questions regarding this approval decision, or if the proposed soil management activities will not occur within 18 months of this letter. I can be reached at (608) 266-0941, or by email at paul.grittner@wisconsin.gov.

Sincerely,

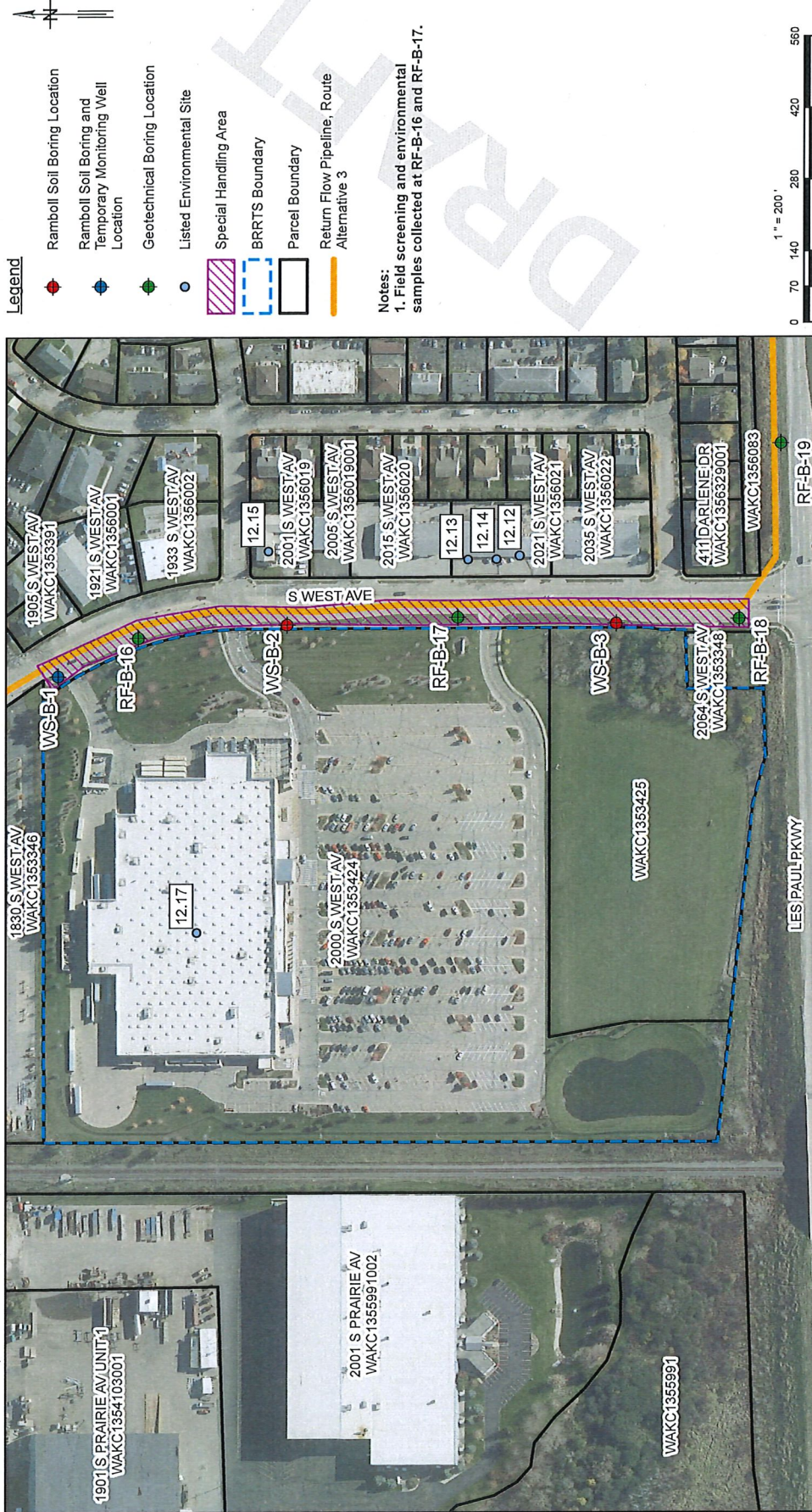


Paul Grittner
Contaminated Material Management Specialist
Remediation & Redevelopment Program

Attachment: Figure No. 3, Special Handling Area - Site 12.17 (November 13, 2018)

cc: Donna Volk, Ramboll, 175 N Corporate Drive, Suite 160, Brookfield, WI 53046 (electronic)
Kelly Zystra, Waukesha Water Utility, 115 Delafield Street, PO Box 1648, Waukesha, WI 53187

FIGURE NO. 3



Notes:
1. Field screening and environmental samples collected at RF-B-16 and RF-B-17.

Aerials provided by Greeley and Hansen on January 28, 2018. Milwaukee aerials were last updated December 14, 2017. Waukesha aerials were last updated November 15, 2016.

Parcel and address information acquired from Waukesha County.

Waukesha, Wisconsin
Great Lakes Water Supply Program
Special Handling Area - Site 12.17
Walmart Supercenter # 1635 / Cretex Concrete Products /
WisDOT Waukesha Concrete Products
Date: 11/13/2018



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Great Lakes Water Supply Program



4-230 D2 Phase II Environmental Site Assessment Report

Site 12.17 – 2000 South West Avenue, Waukesha, Wisconsin

November 2018



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PROGRAM TEAM MEMBER CONSULTANTS:

RAMBOLL

SECTION 1 Introduction

The Great Water Alliance (Program) developed six route alignments for both a Water Supply and Return Flow Pipeline in 2016 and selected the three most viable route alternative alignments, designated as Route Alternatives 2, 3, and 4, for further review on a wide range of criteria. In the first half of 2017, Ramboll US Corporation (Ramboll) performed a desktop review on the three route alternatives for the Return Flow Pipeline regarding the financial and schedule implications of encountering contaminated soil and groundwater during construction. The goal of the desktop review was to identify sites where contamination was present and either avoid or mitigate the costs and possible schedule delays associated with management of hazardous materials. The Program then combined the findings of the contaminated materials desktop review with other technical evaluations during their selection of the preferred route for the Return Flow Pipeline. Based on this evaluation, Route Alternative 3 was selected by the Program as the preferred route for the Return Flow Pipeline.

During the second half of 2017, Ramboll conducted focused Phase II Environmental Site Assessments (ESAs) in the public right-of-way adjacent to 23 sites/clusters of sites identified along the Return Flow portion of Route Alternative 3 during the desktop environmental review. The goal of conducting Phase II ESAs is to identify whether impacts exist within the right-of-way from known or likely sources of contamination on or near the pipeline alignment that could affect the route design, construction costs for remediation, or project schedule. As discussed in the draft *Program-Wide Contaminated Soil and Groundwater Management Plan (DEL 3-130 D3)*, Phase II investigation reports will also include site-specific proposed soil and groundwater handling procedures to supplement the more general Program-wide handling procedures discussed therein. Site-specific material handling procedures will include proposed reuse, temporary staging, and/or disposal methods recommended based on the degree of impacts confirmed at the site. As needed, Phase II reports will also include proposed long-term direct contact protection approaches consistent with the site-specific land use in the right-of-way. These direct contact barriers will be placed in conjunction with construction, backfill, and revegetation activities for the pipeline installation. Pipeline construction is anticipated to begin in late 2019 or early 2020.

This report focuses on the Phase II ESA performed within the right-of-way adjacent to the property located at 2000 South West Avenue, Waukesha, Wisconsin. This location includes current or past businesses of Walmart Supercenter #1635, Cretex Concrete Products, Wisconsin Department of Transportation (WisDOT), and Waukesha Concrete Products (former Cretex). Properties were identified by the Wisconsin Department of Natural Resources (WDNR) as Bureau for Remediation and Redevelopment Tracking System (BRRTS) Numbers 02-68-552746, 02-68-174804, 02-68554922, 03-68-000803, and 07-68-552361. These BRRTS Numbers with the 02 and 03 designations are assigned by the WDNR to track the various releases that have occurred at the property over time. The BRRTS Number with the 07 designation was assigned to track an exemption to construct on a historic fill site. **Sections 3 to 7** of this report provide background and rationale for conducting a focused Phase II ESA at the right-of-way adjacent to the former Cretex property; scope and methods of the ESA; results of the ESA; and conclusions regarding the impact of contaminated materials that will be encountered during construction. Based on the results of this investigation, recommendations for soil management during construction in accordance with Wisconsin Administrative Code (WAC) NR 718.12(1) are provided in **Section 8** of this report.

SECTION 2 Involved Parties

The following parties are involved with the Site:

Program Owner: Waukesha Water Utility
 115 Delafield Street
 PO Box 1648
 Waukesha, WI 53187
 Contact: Kelly Zystra, (262) 409-4430

Program Design Engineer: Greeley and Hansen
 741 North Corporate Drive, Suite 308
 Waukesha, WI 53186
 Contact: Catherine Richardson, (312) 578-2347

Environmental Consultant: Ramboll US Corporation
 175 North Corporate Drive, Suite 160
 Brookfield, WI 53045
 Contact: Donna Volk, (262) 901-3504

Drilling Contractor: On-site Environmental Services, Inc.
 PO Box 280
 Sun Prairie, WI 53590
 Contact: Kim Kapugi, (608) 837-8992

Drilling Contractor: GESTRA Engineering, Inc.
 191 West Edgerton Avenue
 Milwaukee, WI 53207
 Contact: Scott Miller, (414) 234-9111

Laboratory: ALS Environmental
 3352 128th Avenue
 Holland, MI 49424
 Contact: Chad Whelton, (616) 582-5201

Right-of-Way Holder: City of Waukesha
 130 Delafield Street
 Waukesha, WI 53188
 Contact: Craig Bayerl, (262) 524-3600

Agency: Wisconsin Department of Natural Resources
 101 South Webster Street
 Madison, WI 53703
 Contact: Paul Grittner, (608) 266-0941

SECTION 3 Site Background

Ramboll identified the site of Walmart Supercenter #1635, Cretex Concrete Products, WisDOT, and Waukesha Concrete Products (former Cretex) ("Site 12.17") located at 2000 South West Avenue, Waukesha, Wisconsin, as part of the completion of the Contaminated Materials Technical Memorandum (4-120 D1), dated January 2018. Site 12.17 borders the right-of-way of South West Avenue at its eastern property boundary for a total distance of approximately 1,200 feet and is currently zoned as B-5 Community Business District. Impacts to site soil and groundwater from volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and petroleum products associated with historical site use as a manufacturing facility were discovered and investigated beginning in the early 1990s. Localized impacts were identified in several areas across the site; however, previous site investigation activities appeared to focus on the northern portion of the property in the vicinity of the historical site building. Significant outdoor storage on the southern portion of the property was apparent in historical aerial photographs dating back to the 1970s. Shallow groundwater flow direction was observed to be variable, likely due to the influence of construction activities and other engineered features. According to a 2011 geological cross-section developed by Professional Service Industries, Inc. (PSI), depth to groundwater is approximately 14 feet below ground surface (bgs). In 2008, a request was filed for the property for an exemption to construct on a historic landfill. All but one (BRRTS No. 02-68-554922) of the areas of contamination associated with this property have been granted regulatory closure. WDNR personnel indicated that the open BRRTS case, which is associated with Lot 2 (a small subdivided lot in the southwestern corner of Site 12.17), was separated from the remainder of the property to facilitate the redevelopment and subsequent closure of the other identified areas. The responsible party for the listing that remains open pending further development is identified in BRRTS as Highway 59 West Limited Partnership. WDNR personnel indicated that Lot 2 is covered with a temporary cap of topsoil and vegetation and will remain open until redevelopment with a final cover is completed. BRRTS summaries and pertinent WDNR file documents are provided in **Appendix C**.

The majority of the site is currently owned and operated by Walmart. Based on the apparent extensive historical industrial operations and outdoor storage activities on this property from the 1970s through approximately 2005 and the limited investigation on the eastern side of the property adjacent to the right-of-way within South West Avenue, Phase II investigation activities were conducted to identify whether impacts exist within the right-of-way.

SECTION 4 Project Approach and Scope of Investigation

There were five primary factors that contributed to the recommendation for a Phase II Site Investigation to be conducted at Site 12.17, including:

- **Pertinent Data Gaps:** The leaking underground storage tank (LUST) location is not confirmed, and the extent of contamination is not confirmed.
- **Confirmed Release:** Confirmed releases of VOCs, PAHs, and petroleum products to soil and groundwater have been identified.
- **Groundwater Impacts:** Groundwater impacted by VOCs, PAHs, petroleum products, and metals has been identified.
- **Historic Fill Site:** An exemption was requested to construct on the historic fill site in September 16, 2008.
- **Contaminant Type:** Contaminant types include VOCs, metals, and PAHs.

Based on this information, Ramboll proposed collecting soil samples from five locations within the right-of-way of South West Avenue at Site 12.17's eastern boundary. This work was coordinated with one of the Program's geotechnical team members, Gestra Engineering, Inc. (Gestra), where possible to reduce overall cost to the Program and disruption in the area of the site. Two of the five sampling locations proposed by Ramboll were coincident with proposed geotechnical borings, so these two borings were advanced by Gestra with a Ramboll representative present. Ramboll proposed to collect one to two soil samples from each boring; one from between approximately 3 to 4 feet bgs, in the direct contact interval, and one from between approximately 10 and 12 feet bgs, slightly above the presumed shallow groundwater table. Soil sample depth intervals were adjusted based on professional judgement to address conditions encountered in the field. Additionally, Ramboll proposed to convert one to two of the soil boring locations into temporary monitoring wells to facilitate the collection of groundwater samples if groundwater was encountered at an elevation above the terminal depth of the soil borings. **Table 4-1** presents a summary of the soil and groundwater sampling and analysis conducted.

Table 4-1 Summary of Soil and Groundwater Analysis

Boring Location/ Designation	Boring Depth (feet bgs)	Soil		Groundwater ¹
		Sample Depth (feet bgs)	Analytical Testing	Analytical Testing
WS-B-1	18	4 to 5	VOCs, PAHs, RCRA metals	VOCs
		6.5 to 7.5	VOCs, PAHs, RCRA metals	
RF-B-16 ²	16	5 to 6	VOCs, PAHs, RCRA metals	--
		10 to 11	VOCs, PAHs, RCRA metals	
WS-B-2	18	1 to 2	VOCs, PAHs, RCRA metals	--
		3.5 to 4.5	VOCs, PAHs, RCRA metals	
RF-B-17 ²	16	3 to 4	VOCs, PAHs, RCRA metals	--
		12 to 13	VOCs, PAHs, RCRA metals	
WS-B-3	18	3 to 4	VOCs, PAHs, RCRA metals	--
		8 to 9	VOCs, PAHs, RCRA metals	

Notes:

1. The temporary groundwater monitoring well was left in place following installation to allow for sufficient water to collect in the well casing before sampling. The temporary well was abandoned in November 2017.
2. Geotechnical borings were advanced by Gestra and boreholes were abandoned immediately after sampling. Ramboll was on site to conduct analytical sampling.

SECTION 5 Investigation Methodology

The following sections describe the methodology that was utilized during performance of the Phase II activities at the site located at 2000 South West Avenue, Waukesha, Wisconsin. Soil boring and temporary well locations are shown on Figure 1.

5.1 Investigation Preparatory Activities

5.1.1 Health and Safety

Prior to on-site activities, a site-specific Health and Safety Plan (HASP) was developed in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910 for the proposed field activities. Ramboll reviewed the site-specific HASP with all field personnel prior to commencing the field activities.

5.1.2 Location of Utilities

Ramboll contacted Digger's Hotline for the location of public utilities in the area of investigation prior to initiating any subsurface work. A private utility locator was also retained to confirm the location of underground utilities in the vicinity of the proposed sample locations.

5.1.3 Permitting

This site is located in Waukesha, Wisconsin. Prior to conducting subsurface work on public property in this municipality, Ramboll secured the necessary permits required to perform work in the public right-of-way. For this site, permits were obtained from the City of Waukesha. Local police, fire, and other agencies were notified of the schedule for subsurface work, as appropriate, by other members of the Program.

5.2 Field Activities

5.2.1 Soil Borings

On September 8, 2017, two geotechnical borings were advanced in the public right-of-way along West Sunset Drive in locations where previous desktop assessments identified evidence of potential soil or groundwater contamination that could be encountered along the Return Flow Pipeline alignment, and where Ramboll had proposed to collect soil samples. Ramboll coordinated with Gestra to collect soil samples from these borings for analysis for chemical contamination. Gestra team members employed hollow-stem auger drilling to advance soil borings with split-spoon sampling conducted at approximately 2.5-foot intervals. Geotechnical borings were advanced to depths of approximately 16 feet. Samples were evaluated in the field by a Ramboll representative for visual textural classification and screened for the potential presence of VOCs, as described below. Select samples were returned to Ramboll's office for packaging/shipment to a subcontract analytical laboratory. Final geotechnical boring log forms and field screening results summary tables are provided in **Appendix A**.

On October 17, 2017, three soil borings were advanced in the public right-of-way along West Sunset Drive by On-Site Environmental Services with a Ramboll representative present to guide the field activities, observe and document soil and groundwater conditions, and screen and collect laboratory samples. The soil borings were advanced with a hydraulic

probe utilizing a 2-inch diameter drive rod to collect a continuous soil sample. The soil samples were collected inside of a polyethylene sheath inserted into the end of the drive rod. All soil borings were advanced to depths of approximately 18 feet below grade to characterize soils likely to be encountered while installing pipe to a maximum depth of approximately 13 feet below grade. Soil samples were continuously collected from the borings for visual classification, field screening, and laboratory analysis. The soil samples were described in the field with respect to the soil type, grain size distribution, and color (or discoloration), odor, and moisture content. Observations from the borings were recorded on soil boring log forms, provided in **Appendix A**.

5.2.2 Soil Sampling Methods

The soil samples were screened in the field using a 10.6 electron volt (EV) photoionization detector (PID) to evaluate for the presence of total VOCs. The PID was calibrated in the field according to manufacturer's instructions, using 100 parts per million (ppm) isobutylene span gas and air (zero gas), and checked between each screening event for proper response. The PID readings and visual/olfactory evidence of contamination, if observed, were recorded on the boring logs included in **Appendix A**.

Soil boring locations were chosen based on the location of the proposed Return Flow Pipeline. Five soil boring locations were evenly spaced approximately 200 to 300 feet apart along the right-of-way of South West Avenue, adjacent to the eastern property boundary of Site 12.17. The locations were selected to determine whether or not residual contamination from the closed BRRTS incidents associated with Site 12.17 exist in the right-of-way of South West Avenue and would potentially be encountered during the construction of the Return Flow Pipeline. A total of ten soil samples were collected from the five soil borings (two samples per soil boring).

Two subsurface soil samples were collected from each of the soil borings for laboratory analysis. If visual or olfactory evidence or elevated PID readings were noted, a soil sample was collected from the interval at which the most significant impacts were observed. If soil without evidence of impacts was noted at a depth greater than observed impacts, a second sample was collected from this interval to delineate the vertical extent of contamination. If no visual or olfactory evidence or elevated PID readings were noted at any depth interval of a soil boring, a sample was collected from the interval most likely to be impacted based on a review of available site documents and field observations, such as apparent depth to groundwater. Following soil sample collection activities, the soil borings not converted into temporary monitoring wells were abandoned with bentonite in accordance with WAC NR 141.25 requirements. The borings were then completed with a surface patch matching the surrounding ground surface material. Boring abandonment forms are provided in **Appendix A**.

5.2.3 Temporary Monitoring Well Installation

Evidence of groundwater was encountered at an approximate depth of 6 feet bgs in WS-B-1. Soil screening results showed slightly elevated PID readings. The levels did not appear to be an indication of contamination. This soil boring was converted into a temporary groundwater monitoring well to facilitate the collection of a groundwater sample. PID readings recorded at the subsequent two boring locations were generally representative of background, so a second temporary monitoring well was not installed. The temporary monitoring well at WS-B-1 was constructed using a 1-inch diameter PVC riser with a 10-foot section of 0.01-inch-slotted well screen. The well was completed by installing a sand filter pack around and approximately 1 to 2 feet above the well screen and granular bentonite above the filter pack to near the ground surface. A flush-mount protector pipe was installed at the ground surface and the ground surface seal was constructed to match the existing surface. The groundwater sample was collected from the temporary monitoring well as described below.

5.2.4 Groundwater Sampling Methodology

The groundwater sample was collected using a low-flow technique and a peristaltic pump fitted with disposable tubing. The pump was used to purge a small volume of water from the temporary well in an attempt to reduce turbidity. Groundwater sampling equipment was thoroughly decontaminated between each sampling location using an Alconox® solution and rinsed in deionized water. New disposable polyethylene tubing was utilized for sample collection for each well location. A new pair of nitrile gloves was used during the collection of each sample to minimize the potential for cross-contamination.

5.2.5 Soil and Groundwater Sample Collection and Laboratory Analysis

The soil samples were containerized in two laboratory-provided 40-milliliter (mL) glass sample containers, preserved with methanol to analyze for VOCs; a 250-mL amber jar to analyze for PAHs and RCRA metals, and dry weight. The groundwater sample was containerized in three laboratory-provided 40-mL glass sample containers, preserved with hydrochloric acid (HCl). Following sample collection, each sample container was labelled with the sample location identification, date of sample collection, and intended analysis. The sample containers were then placed in re-sealable plastic bags and packed in an iced, insulated container.

A chain-of-custody form was completed daily after sampling and accompanied the insulated container of samples to the laboratory. The chain-of-custody form was signed by the sampler and completed in a legible manner using waterproof ink. The selected samples were placed on ice and submitted to ALS Environmental, a Wisconsin-certified laboratory, located in Holland, Michigan, for analysis, following standard chain-of-custody procedures. Samples were transported to the laboratory via a commercial courier.

The soil and groundwater samples collected during the Phase II site investigation were submitted to ALS Environmental, for laboratory analysis. Samples were analyzed for contaminant types previously identified during site investigation activities at Site 12.17 in the 1990s. Analyses for soil samples collected include VOCs using United States Environmental Protection Agency (USEPA) Method 8260B, RCRA metals using USEPA Method 6010C, and PAHs using USEPA Method 8270C. Analysis for groundwater samples collected include VOCs using USEPA Method 8260B. For quality assurance/quality control purposes, one trip blank sample was included in every cooler delivered to the sample courier and was analyzed for VOCs.

5.3 Investigation Derived Waste Management

Due to the small amount of soil generated during the advancement of the soil borings, excess soils were not generated during field investigations. Soil obtained from soil borings collected using the hydraulic probe was containerized as samples and returned to Ramboll's office to verify classification and was then disposed of as solid waste, after receipt of analytical testing results. Excess soil generated during the geotechnical borings was collected in a roll-off container. Under the management of the geotechnical Program team, these soils were disposed off-site in a licensed landfill. The small volume of water generated from the purging and sampling of the temporary monitoring wells was placed in 5-gallon pails and disposed at the City of Waukesha Clean Water Plant.

SECTION 6 Subsurface Assessment Results

6.1 General Soil and Groundwater Conditions

Soils at the site consist of gravelly sand and silty clay fill soil to depths ranging from 2.5 to 5.3 feet bgs. Recycled broken concrete was also noted in RF-B-16. There were no non-exempt fill types (such as ash, cinders or foundry sand) noted in the fill soil. A buried topsoil layer was noted in borings WS-B-1, WS-B-2, and WS-B-3 at depths from 4.5 to 5 feet below ground surface. The fill/topsoil was underlain by a native dark brown silty clay layer from between 2 to 10 feet thick, with some organic material (wood and shells) noted at WS-B-2. Beneath the silty clay layer, sand with varying amounts of gravel was encountered to the terminal depth of each boring (18 feet bgs). Depth to groundwater in the temporary monitoring well installed at soil boring WS-B-1 was observed to be 6.0 feet bgs prior to sample collection. PID readings were generally 0.1 to 1.7 instrument units (iu), except at WS-B-1, where readings measured between 4.8 and 14.8 iu. The sample reading of 14.8 iu was recorded between 4 and 5 feet bgs within what appeared to be a probable buried topsoil layer. A soil sample from 4 to 5 feet was submitted for laboratory analysis and is discussed further.

6.2 Soil Quality Results

The soil analytical results were tabulated and compared to the generic Residual Contaminant Levels (RCLs) published in WAC NR 720, which are based on the protection of human health from direct contact and the protection of groundwater. Naturally occurring compounds were also compared to the Background Threshold Values (BTVs) where established by the WDNR. Detected compounds along with their respective RCLs and BTVs are provided in **Table 1** and shown on **Figure 2**. Soil analytical results revealed several low-level detections of analyzed parameters in the samples collected from the site, as discussed below.

RCRA metals were detected in each of the soil samples collected at the site. Generally, these metals concentrations were below their respective RCLs and/or BTVs. Selenium, which was present at concentrations between 0.55 and 3.0 milligrams per kilogram (mg/kg), exceeded the WAC NR 720 Groundwater Pathway RCL (0.52 mg/kg). There is currently no BTV established for selenium; however, based on our evaluation along the Return Route Alternative 3, selenium was detected at similar concentrations across the route area. Further assessment of selenium determined that this metal was not a site related constituent and a statistical evaluation using WDNR assessment tools supported a conclusion that the selenium levels found are below the program area specific background threshold value for naturally occurring metals. A Program-wide background study for selenium was prepared and submitted to the WDNR under a separate cover.

One or more PAH constituents were detected in the shallow fill soil samples collected from three of the five soil borings advanced at the site (RF-B-17, WS-B-1, and WS-B-3). These samples were collected from 3 to 5 feet bgs. Yet there were no consistent RCL exceedances of any PAH constituents analyzed. Each of the PAH detections was below its respective RCL. These concentrations are consistent with the observation of roadway construction fill materials along South West Avenue. A review of historical air photos indicates the widening/reconstruction along this stretch of South West Avenue in approximately 2010.

WS-B-1 (4 to 5 feet bgs) also contained a VOC detection (2-butanone; aka methyl ethyl ketone, MEK); however, it was detected at concentrations between the method detection limit and the reporting limit. This detection was also flagged by the laboratory as a probable laboratory contaminant. The 2-butanone detection was below generic RCLs for direct contact and protection of groundwater. 2-Butanone was not identified as a contaminant of concern for the site during earlier investigations at Site 12.17. Because this detection was flagged as a probable laboratory contaminant and

2-butanone was not detected in any of the other soil samples or groundwater sample collected from the right-of-way during Ramboll's investigation, this detection is not considered to be representative of site conditions. No other VOCs were detected from any of the soil samples collected.

6.3 Groundwater Quality Results

The groundwater analytical results are typically tabulated and compared to the WAC NR 140 Enforcement Standards (ESs) and Preventive Action Limits (PALs). WAC NR 140 ESs are generally equivalent to the USEPA's Maximum Contaminant Levels (MCLs), and PALs are typically 10 to 20 percent of their respective ES concentrations. However, for this site, there were no detections of analyzed parameters. No VOC constituents were detected from the groundwater sample collected from the temporary well, WS-B-1, at the site.

SECTION 7 Conclusions

Based on the soil and groundwater analytical results, the site appears to have low-level PAH concentrations in shallow fill soils within 5 feet of the ground surface consistent with small amounts of broken pavement. These detections are common in roadway fill materials due to the usage of asphalt and roadway sealing tars used for repair and consistent with the general construction procedures associated with grading and road-building. As indicated previously, South West Avenue underwent roadway widening/reconstruction in 2010. On this site, the depth of this soil fill material is consistent with reworked roadway construction backfill. Furthermore, there is an observed topsoil layer at a consistent depth of 4.5 to 5 feet bgs, with the soil fills located above and native soils below this clearly distinguished layer. There appears to be very little broken pavement present since the quantified PAHs detected in shallow soils do not exceed WAC NR 720 RCLs. With the exception of low levels of naturally-occurring metals, which are considered to be representative of background conditions for the area, no other parameters were detected at depths greater than 5 feet bgs.

Based upon this information and data, Ramboll has concluded that the soil fill present in this area contains small amounts of broken pavement and low-level PAHs consistent with this type of fill material. Based on the detection of PAHs in three out of ten soil samples collected during this assessment, the WDNR has determined that the soil should be managed under WAC NR 718. Approximately 1,350 cubic yards of fill material is assumed to contain these low-level PAH detections and is therefore proposed to be managed under WAC NR 718. Based on the locational criteria identified in WAC NR 718.12, an exemption is required. Information required by the WDNR to request a WAC NR 718.12 exemption is outlined in **Section 8**. To streamline the review process, approval of this Phase II Environmental Assessment report will also be considered approval of the required WAC NR 718.12 exemption allowing on site reuse of contaminated soil and the related WAC NR 718.12(1)(c)5 location exemption request. Ramboll also did not identify any VOC constituents present in groundwater; therefore, Ramboll also does not propose to conduct any additional groundwater investigation and is not recommending special handling for groundwater if it is encountered during construction along this portion of the pipeline.

SECTION 8 Recommendations for Soil and Groundwater Handling

Based upon the results from the multiple soil samples collected at this area of the site and described in Section 6, the upper 5 feet of soil along approximately 1,200 feet of the proposed pipeline construction area low-level PAH concentrations (below generic RCLs) will be replaced into the excavations from which it was removed. This reuse of soil fill will be conducted consistent with all but one of the WAC NR 718 location requirements and program specific construction specifications. The soil quality information and the soil management details included in this Phase II Investigation report are to be considered both a formal request for a WAC NR 718.12 waste exemption and the WAC 718.12(1)(c)5 location exemption. The planned soil management procedures will be implemented during construction following the WDNR's approval of this Phase II investigation report which will also be considered approval of the WAC NR 718.12 exemption requirements for this location. Based on the absence of PAH or VOC detections from depths greater than 5 feet, soil excavated from depths greater than 5 feet is assumed to be clean and is proposed for reuse within the pipeline excavation or at another location without restriction, provided that no evidence of a previously unidentified release is observed in these soils during construction. Because VOCs were not detected in the groundwater sample collected from the right-of-way, no special handling of any groundwater or run-in water which enters the excavation is proposed other than that required under the construction dewatering operations general permit.

8.1 General Proposed Construction Methods

The proposed excavation for the Return Flow Pipeline in this area is estimated to be 6 feet wide, 13 feet deep, and was to extend the entire length of the property boundary (approximately 1,200 feet). Since the PAH detections were limited to the observed depth of the fill, the material requiring handling in accordance with WAC NR 718 is conservatively estimated at 5 feet in depth. Based on these dimensions, approximately 1,350 cubic yards of soil is estimated to contain these low-level PAH detections and is therefore proposed to be managed in accordance with WAC NR 718. As discussed above, low-level impacted soil from the upper 5 feet of the soil column will be replaced into the excavations from which it was removed consistent with construction specifications and WAC NR 718 as described further below.

In the event that excess confirmed contaminated soil from the upper 5 feet of the soil column is generated that cannot be re-used in the Program excavation from which it was removed, this material will be transported directly to a disposal facility. Contaminated soils which cannot be replaced into excavations and are proposed for off-site disposal at a licensed landfill facility will be profiled for waste characterization prior to or during construction, based on the requirements of the receiving landfill and will be transported by a licensed waste hauler in accordance with applicable Wisconsin DOT requirements.

8.2 Temporary Stockpiles

During construction activities, temporary soil stockpiles will be maintained in accordance with WAC NR 718.05(3). Temporary soil stockpiles will not exceed 2,500 cubic yards of excavated soils and temporary soil staging will not exceed 15 days. Temporary soil stockpiles will meet the following requirements for exemption from regulation under WAC Chs. NR 500 to 538:

1. The entire soil pile is anticipated to be located adjacent to the excavation, and thus, in accordance with WAC NR 718.05(3) shall be located within 500 feet of the excavation from which the soil was removed, or within 1,000 feet of the excavation from which it was removed if the soil is stored on the same property from which it was generated.
2. The same soil shall not be stored for more than 15 days.

3. All soil shall be placed on base material impervious to contaminants, such as concrete, asphalt, plastic sheeting or impervious construction fabrics.
4. Surface water contact with soil shall be prevented, including the construction of berms if necessary, to control surface water movement.
5. The contaminated soil shall be covered when it is not being moved, with a cover material sufficient to prevent infiltration of precipitation and to inhibit volatilization of soil contaminants.

8.3 Locational Criteria for On-Site Management of Soil

Replacement of soils removed from the upper 5 feet of the soil column within the excavations from which they were removed will be conducted in accordance with the locational criteria specified in WAC NR 718.12(1) and listed below, except where specifically noted.

1. Soils will not be placed within a floodplain.
2. Soils will not be placed within 100 feet of any wetland or critical habitat area.
3. Soils will not be placed within 300 feet of any navigable river, stream, lake, pond, or flowage.
4. Soils will not be placed within 100 feet of any on-site water supply well or 300 feet of any off-site water supply well.
5. Soils are proposed for replacement up to an approximate depth of 5 feet below ground surface which is less than 3 feet of the high groundwater level and thus requires an exemption from WAC NR 718.12 (1)(c)(5). The exemption request approval is based upon the following:
 - i. The site-specific data confirms that there are no VOCs detected in the groundwater sampled within the Right-of-Way.
 - ii. The concentrations of PAHs in all ten of the soil samples collected in the Right-of-Way are below the Wisconsin RCLs for protection of groundwater and direct contact.
 - iii. Soils are generally a mix of clay, and silts with some sand that typically have low permeability and high sorptive capacity for PAHs.
 - iv. The area is served by the local municipal water system.
 - v. Replacement of the soil will not create a threat to public health, safety, or welfare or the environment, as there are no RCL exceedances and no material change to how/where the soil currently exists.
 - vi. Reusing the low-level impacted soil in the excavation from which it came is the most sustainable and cost-effective approach to management of these materials.
6. Soil will not be placed at a depth greater than the depth of the excavation from which the soil was removed.
7. Soils will not be placed where the soil poses a threat to public health, safety, or welfare or the environment.

Therefore, this WAC NR 718 contaminated soil management request will be protective of human health and the environment and will meet six of the seven locational requirements. Placement closer to the high groundwater elevation will remain protective due to the low concentrations of PAHs present in the soil samples and the lack of any complete exposure pathways that could cause excess risk. **Figure 3** has been annotated to identify the pipeline location where the slightly impacted soils from Site 12.17 will be placed within the top approximately 5 feet of the excavation.

8.4 Soil Characterization

A total of ten soil samples have been collected along the proposed pipeline adjacent to the site identified as the Cretex Concrete Products, WisDOT, and Waukesha Concrete Products (former Cretex) and Walmart Supercenter #1635 ("Site 12.17") located at 2000 South West Avenue, Waukesha, Wisconsin. Five of these ten soil samples were collected from the shallow fill soil (5 feet or less bgs). Samples were analyzed for contaminant types previously identified during site investigation activities at Site 12.17 in the 1990s. Analyses for soil samples included VOCs using USEPA Method 8260B, RCRA metals using USEPA Method 6010C, and PAHs using USEPA Method 8270C. All sampling was conducted within the right-of-way, adjacent to Site 12.17. Since the project is focused on evaluating the potential for contamination to be encountered during construction, the sample locations were limited to the area of the proposed alignment, including areas close to previously identified sources where possible. Based on the depth of roadway fill materials and anticipated construction methodology, approximately 1,350 cubic yards of soil fill material is planned to be managed under WAC NR 718. Per WAC NR 718.12(1)(e), for soil volumes exceeding 600 cubic yards, one sample per 300 cubic yards should be collected for analysis. For this site, nine soil samples would be required. A total of ten soil samples were collected as part of this assessment; however only five of these were collected from 5 feet bgs or less. Based on the very low concentrations of PAHs detected in the soil samples in this area, we anticipate that the number of soil samples is sufficient to meet the need for characterization.

8.5 Continuing Obligations

Because there were no exceedances of WAC NR 720 RCLs within the pipeline alignment, there is no need for a direct contact barrier or infiltration barrier to be placed at the conclusion of construction activities in this area. No other continuing obligations apply.

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Tables



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Table 1 - Soil Analytical Data
12.17: Walmart Supercenter #1645 / Cretex Concrete Products / WI DOT Waukesha Concrete Products
2000 South West Avenue, Waukesha, Wisconsin

Parameters	Soil RCLs			Sample ID	RF-B-16 (5-6')	RF-B-16 (10-11')	RF-B-17 (3-4')	RF-B-17 (12-13')	Trip Blank	WS-B-1 (4-5')
				Soil Type	Gravelly sand fill	Sand	Silty sand fill	Sandy silt	--	Silt (buried topsoil)
				PID (ppm)	0.0	0.1	0.1	0.0	--	14.8
	Non-Industrial Direct Contact	Industrial Direct Contact	Groundwater Pathway	BTV	9/8/2017	9/8/2017	9/8/2017	9/8/2017	9/8/2017	10/17/2017
VOCs (µg/kg)										
2-Butanone (MEK)	28,400,000	28,400,000	1,666.1	--	<40	<51	<54	<50	<40	630 J
PAHs (µg/kg)										
Anthracene	17,900,000	100,000,000	196,949.2	--	<1.7	<1.7	93	<1.7	#N/A	<3.2
Benzo(a)anthracene	1,140	20,800	--	--	<2.8	<2.9	100	<2.8	#N/A	<5.3
Benzo(a)pyrene	115.0	2,110	470	--	<1.1	<1.2	77	<1.1	#N/A	<2.2
Benzo(b)fluoranthene	1,150	21,100	479.3	--	<1.7	<1.8	180	<1.7	#N/A	<3.3
Benzo(ghi)perylene	--	--	--	--	<3.0	<3.1	94	<3.1	#N/A	<5.8
Benzo(k)fluoranthene	11,500	211,000	--	--	<2.3	<2.4	130	<2.4	#N/A	<4.5
Chrysene	115,000	2,110,000	144.6	--	<1.7	<1.8	140	<1.7	#N/A	<3.3
Dibenzo(a,h,)anthracene	115.0	2,110	--	--	<1.5	<1.5	56	<1.5	#N/A	<2.8
Fluoranthene	2,390,000.00	30,100,000.00	88,877.81	--	<1.3	<1.3	330	<1.3	#N/A	<2.5
Indeno(1,2,3-cd)pyrene	1,150	21,100	--	--	<1.4	<1.4	83	<1.4	#N/A	<2.7
Phenanthrene	--	--	--	--	<1.6	<1.6	85	<1.6	#N/A	110
Pyrene	1,790,000	22,600,000	54,545.5	--	<1.7	<1.7	270	<1.7	#N/A	<3.2
Metals (mg/kg)										
Arsenic ³	0.677	3.00	0.58	8.3	1.4	0.76	1.5	1.9	#N/A	5.1
Barium ³	15,300	100,000	164.8	364	33	9.1	14	26	#N/A	120
Cadmium ³	71	985	0.75	1.07	0.052	0.049	0.030	0.0058 J	#N/A	0.58
Chromium	--	--	360,000	43.5	6.0	4.9	5.0	8.2	#N/A	7.8
Lead ³	400	800	27	51.6	4.4	2.7	3.8	5.7	#N/A	6.0
Mercury	3.13	3.13	0.21	--	0.0076 J	<0.0032	<0.0033	0.0067 J	#N/A	0.070
Selenium	391	5,840	0.52	--	1.1 C	0.55 C	0.77 C	0.81 C	#N/A	3.0 C
Silver	391	5,840	0.85	--	0.018	0.0094 J	0.0086 J	0.014	#N/A	0.034

Notes:

VOCs = Volatile Organic Compounds
PAHs = Polynuclear Aromatic Hydrocarbons
RCL = Residual Contaminant Level
BTV = Background Threshold Value
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram

¹ Groundwater Pathway RCL is for 1,2,4- and 1,3,5-Trimethylbenzenes combined.
² Analytical results for m-&p-xylene are compared to the more stringent of the m-xylene and p-xylene RCLs.

A Parameter exceeds NR 720 Residual Contaminant Level (RCL) for Non-Industrial Direct Contact.
B Parameter exceeds NR 720 RCL for Industrial Direct Contact.
C Parameter exceeds NR 720 RCL for Groundwater Pathway.
J Parameter is present at an estimated concentration between the Method Detection Limit and Reporting Limit.
#N/A = Not analyzed
-- No RCL or Surficial BTV established.
PID = Photoionization Detector
ppm = parts per million
Detections of metals above the NR720 RCLs are only considered exceedances if they are also above the BTV.

Table 1 - Soil Analytical Data
12.17: Walmart Supercenter #1645 / Cretex Concrete Products / WI DOT Waukesha Concrete Products
2000 South West Avenue, Waukesha, Wisconsin

Parameters	Soil RCLs			Sample ID	WS-B-1 (6.5-7.5')	WS-B-2 (1-2')	WS-B-2 (3.5-4.5')	WS-B-3 (3-4')	WS-B-3 (8-9')	Trip Blank - 2
				Soil Type	Silty clay	Sandy clay fill	Sandy clay fill	Gravelly silt fill	Clay	--
				PID (ppm)	9.7	1.1	1.7	0.5	0.3	--
	Non-Industrial Direct Contact	Industrial Direct Contact	Groundwater Pathway	BTV	10/17/2017	10/17/2017	10/17/2017	10/17/2017	10/17/2017	10/17/2017
VOCs (µg/kg)										
2-Butanone (MEK)	28,400,000	28,400,000	1,666.1	--	<61	<54	<49	<55	<54	<40
PAHs (µg/kg)										
Anthracene	17,900,000	100,000,000	196,949.2	--	<1.9	<1.8	<1.7	<1.8	<1.7	#N/A
Benzo(a)anthracene	1,140	20,800	--	--	<3.2	<3.0	<2.8	81	<2.9	#N/A
Benzo(a)pyrene	115.0	2,110	470	--	<1.3	<1.2	<1.1	74	<1.2	#N/A
Benzo(b)fluoranthene	1,150	21,100	479.3	--	<2.0	<1.9	<1.8	100	<1.8	#N/A
Benzo(ghi)perylene	--	--	--	--	<3.5	<3.2	<3.1	88	<3.2	#N/A
Benzo(k)fluoranthene	11,500	211,000	--	--	<2.7	<2.5	<2.4	100	<2.4	#N/A
Chrysene	115,000	2,110,000	144.6	--	<2.0	<1.9	<1.8	120	<1.8	#N/A
Dibenzo(a,h,)anthracene	115.0	2,110	--	--	<1.7	<1.6	<1.5	55	<1.5	#N/A
Fluoranthene	2,390,000.00	30,100,000.00	88,877.81	--	<1.5	<1.4	<1.3	170	<1.4	#N/A
Indeno(1,2,3-cd)pyrene	1,150	21,100	--	--	<1.6	<1.5	<1.4	65	<1.4	#N/A
Phenanthrene	--	--	--	--	<1.8	<1.7	<1.6	66	<1.6	#N/A
Pyrene	1,790,000	22,600,000	54,545.5	--	<1.9	<1.8	<1.7	140	<1.7	#N/A
Metals (mg/kg)										
Arsenic ³	0.677	3.00	0.58	8.3	5.6	2.4	3.1	2.5	2.4	#N/A
Barium ³	15,300	100,000	164.8	364	49	22	23	56	25	#N/A
Cadmium ³	71	985	0.75	1.07	0.10	0.056	<0.0032	0.025	0.11	#N/A
Chromium	--	--	360,000	43.5	9.5	6.0	6.9	10	6.3	#N/A
Lead ³	400	800	27	51.6	11	6.1	5.3	7.7	6.2	#N/A
Mercury	3.13	3.13	0.21	--	0.027	0.017	0.017	0.027	0.015	#N/A
Selenium	391	5,840	0.52	--	1.7 C	0.87 C	0.81 C	1.3 C	0.96 C	#N/A
Silver	391	5,840	0.85	--	0.044	0.010 J	0.0074 J	0.020	0.018	#N/A

Notes:

VOCs = Volatile Organic Compounds
PAHs = Polynuclear Aromatic Hydrocarbons
RCL = Residual Contaminant Level
BTV = Background Threshold Value
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram

¹ Groundwater Pathway RCL is for 1,2,4- and 1,3,5-Trimethylbenzenes combined.

² Analytical results for m-&p-xylene are compared to the more stringent of the m-xylene and p-xylene RCLs.

A Parameter exceeds NR 720 Residual Contaminant Level (RCL) for Non-Industrial Direct Contact.

B Parameter exceeds NR 720 RCL for Industrial Direct Contact.

C Parameter exceeds NR 720 RCL for Groundwater Pathway.

J Parameter is present at an estimated concentration between the Method Detection Limit and Reporting Limit.

#N/A = Not analyzed

-- No RCL or Surficial BTV established.

PID = Photoionization Detector

ppm = parts per million

Detections of metals above the NR720 RCLs are only considered exceedances if they are also above the BTV.



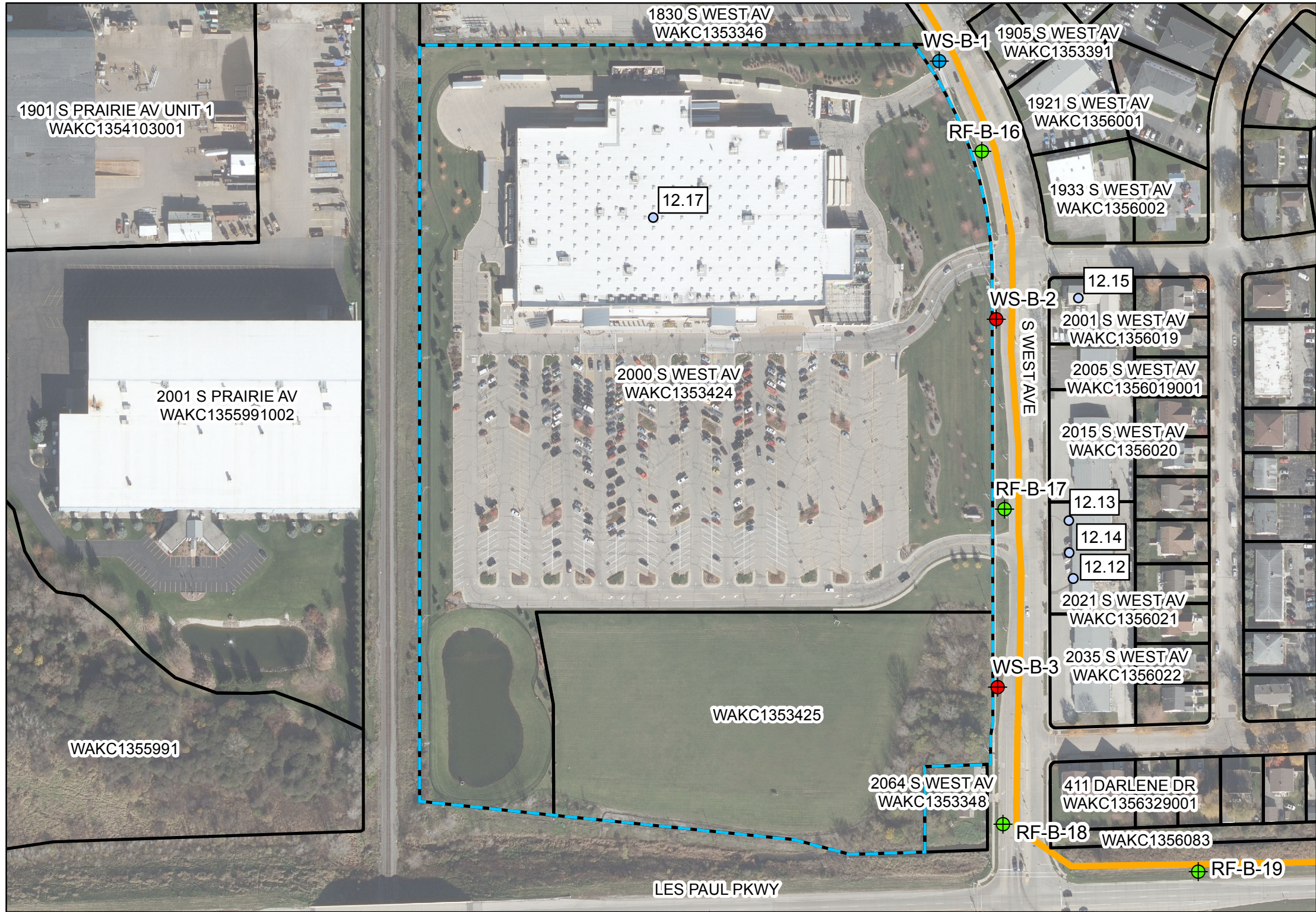
Figures



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Aerials provided by Greeley and Hansen on January 26, 2018.
 Milwaukee aerials were last updated December 14, 2017.
 Waukesha aerials were last updated November 15, 2016.

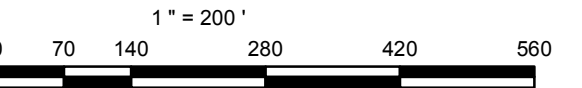
FIGURE NO. 1



Legend

- Ramboll Soil Boring Location
- Ramboll Soil Boring and Temporary Monitoring Well Location
- Geotechnical Boring Location
- Listed Environmental Site
- BRRTS Boundary
- Parcel Boundary
- Return Flow Pipeline, Route Alternative 3

Note: Field screening and environmental samples collected at RF-B-16 and RF-B-17.



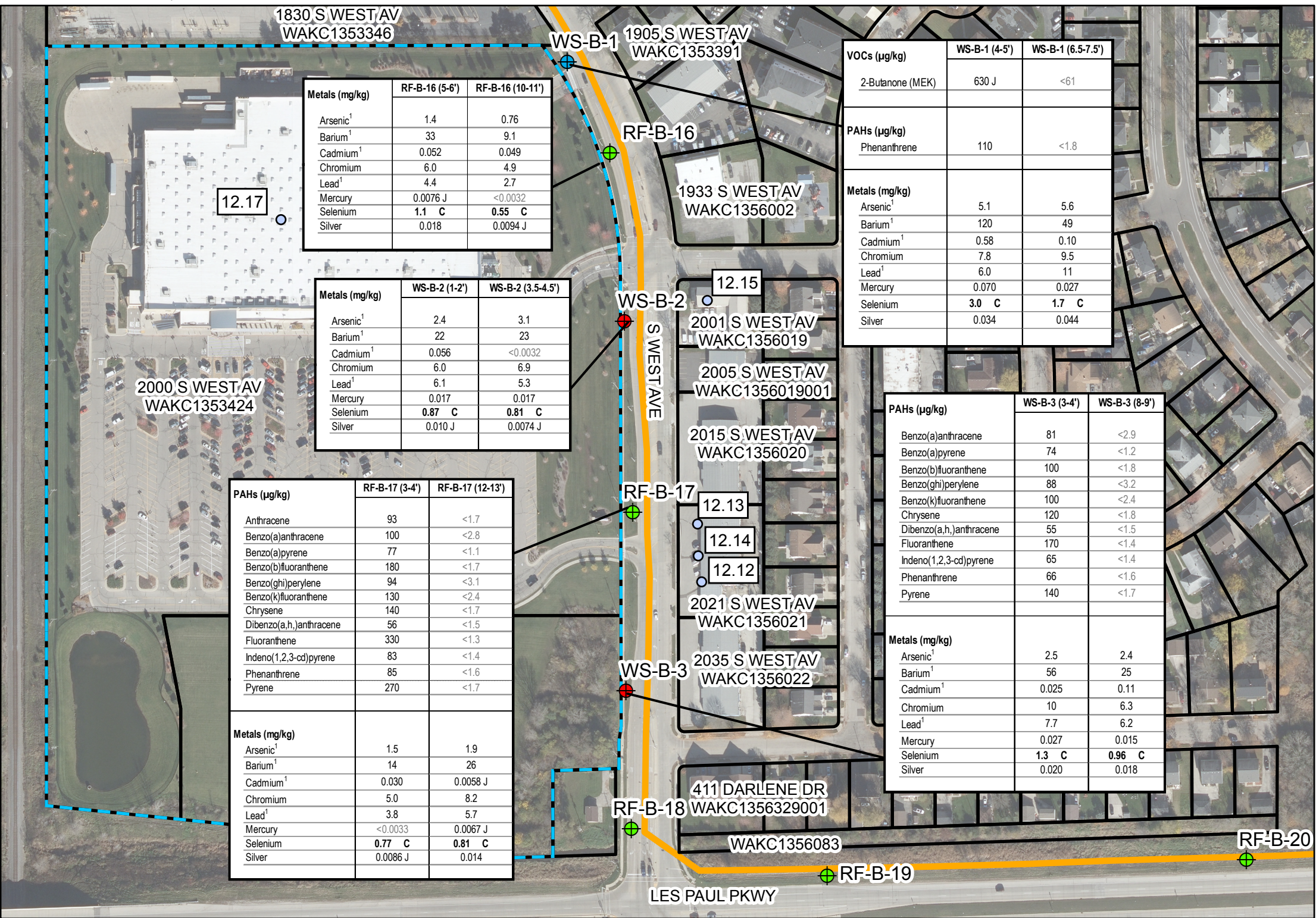
Parcel and address information acquired from Waukesha County.

Aerials provided by Greeley and Hansen on January 26, 2018.
Milwaukee aerials were last updated December 14, 2017.
Waukesha aerials were last updated November 15, 2016.

Legend

- Ramboll Soil Boring Location
- Ramboll Soil Boring and Temporary Monitoring Well Location
- Geotechnical Boring Location
- Listed Environmental Site
- BRRTS Boundary
- Parcel Boundary
- Return Flow Pipeline, Route Alternative 3

FIGURE NO. 2



Parameters	Soil RCLs			
	Non-Industrial Direct Contact	Industrial Direct Contact	Groundwater Pathway	BTV
VOCs (µg/kg) 2-Butanone (MEK)	28,400,000	28,400,000	1,666.1	--
PAHs (µg/kg)				
Anthracene	17,900,000	100,000,000	196,949.2	--
Benzo(a)anthracene	1,140	20,800	--	--
Benzo(a)pyrene	115.0	2,110	470	--
Benzo(b)fluoranthene	1,150	21,100	479.3	--
Benzo(ghi)perylene	--	--	--	--
Benzo(k)fluoranthene	11,500	211,000	--	--
Chrysene	115,000	2,110,000	144.6	--
Dibenzo(a,h)anthracene	115.0	2,110	--	--
Fluoranthene	2,390,000	30,100,000	88,878	--
Indeno(1,2,3-cd)pyrene	1,150	21,100	--	--
Phenanthrene	--	--	--	--
Pyrene	1,790,000	22,600,000	54,545.5	--
Metals (mg/kg)				
Arsenic ¹	0.677	3.00	0.58	8.3
Barium ¹	15,300	100,000	164.8	364
Cadmium ¹	71	985	0.75	1.07
Chromium	--	--	360,000	43.5
Lead ¹	400	800	27	51.6
Mercury	3.13	3.13	0.21	--
Selenium	391	5,840	0.52	--
Silver	391	5,840	0.85	--

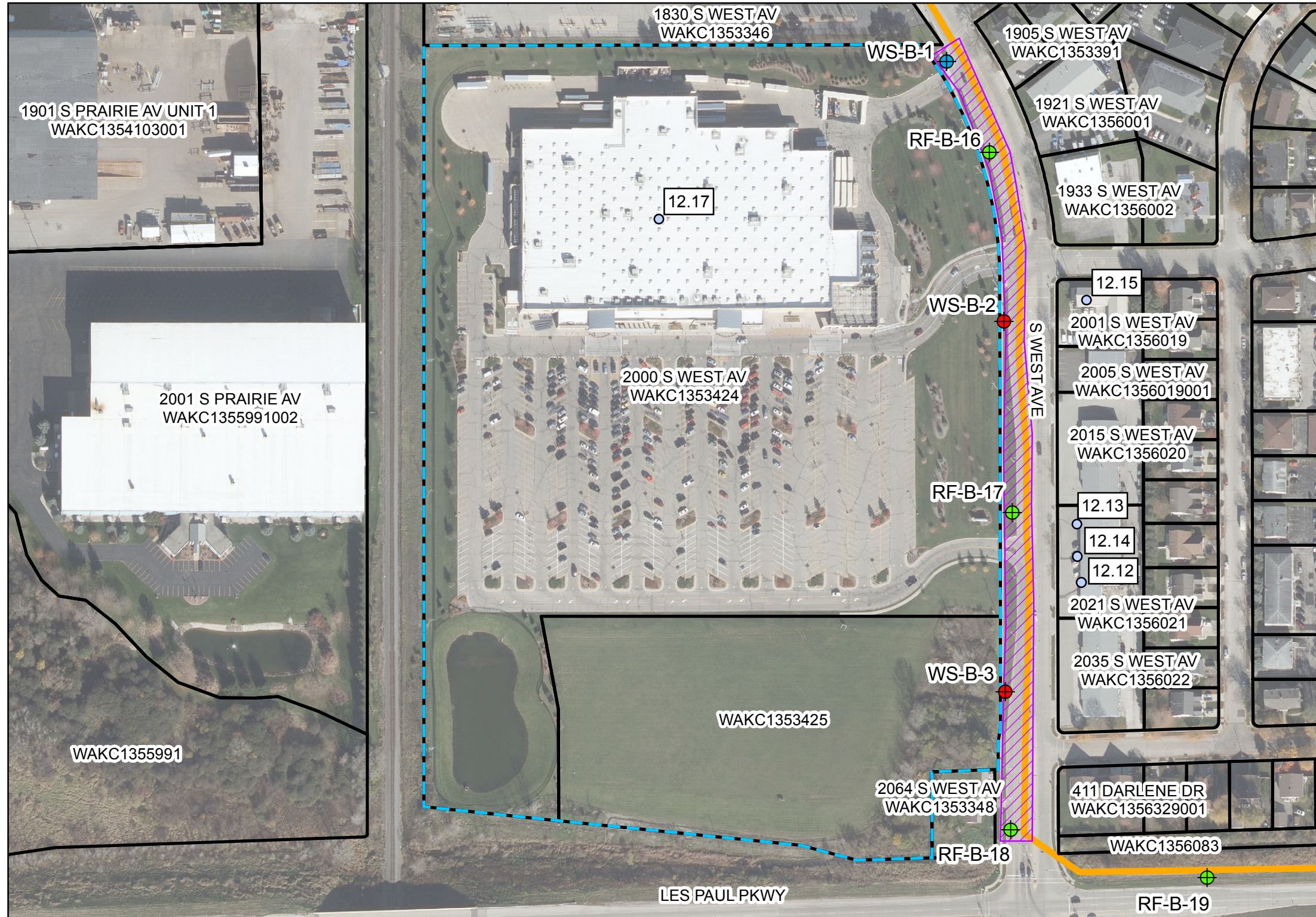
Notes:
VOCs = Volatile Organic Compounds
PAHs = Polynuclear Aromatic Hydrocarbons
RCL = Residual Contaminant Level
BTV = Background Threshold Value
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
C Parameter exceeds NR 720 RCL for Groundwater Pathway.
J Parameter is present at an estimated concentration between the Method Detection Limit and Reporting Limit.
-- No RCL or Surficial BTV established.
¹ Detections of metals above the NR720 RCLs are only considered exceedances if they are also above the BTV.

Note: Field screening and environmental samples collected at RF-B-16 and RF-B-17.
Parcel and address information acquired from Waukesha County.

Waukesha, Wisconsin
Great Lakes Water Supply Program
Soil Detections for Site 12.17
Walmart Supercenter # 1635 / Cretex Concrete Products /
WisDOT Waukesha Concrete Products
Date: 11/12/2018

FIGURE NO. 3

Aerials provided by Greeley and Hansen on January 26, 2018.
Milwaukee aerials were last updated December 14, 2017.
Waukesha aerials were last updated November 15, 2016.

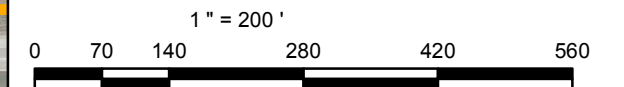


Legend

- Ramboll Soil Boring Location
- Ramboll Soil Boring and Temporary Monitoring Well Location
- Geotechnical Boring Location
- Listed Environmental Site
- Special Handling Area
- BRRS Boundary
- Parcel Boundary
- Return Flow Pipeline, Route Alternative 3

Notes:

1. Field screening and environmental samples collected at RF-B-16 and RF-B-17.



Parcel and address information acquired from Waukesha County.

(NO TEXT FOR THIS PAGE)



Appendix A – Soil Boring Logs and Abandonment Forms



(NO TEXT FOR THIS PAGE)

PID Readings and Laboratory Sample Information

Site ID **12.17**

Contractor **GESTRA**

Boring **RF-B-16**

Sample Interval	PID	Laboratory Sample
0-2'	0.3	--
2-3.5'	0.1	--
4.5-6'	0.0	5-6' (VOCs, PAHs, RCRA Metals)
7-8.5'	0.0	--
9.5-11'	0.1	10-11' (VOCs, PAHs, RCRA Metals)
12-13.5'	0.1	--
14.5-16'	0.0	--

Boring **RF-B-17**

Sample Interval	PID	Laboratory Sample
0-2'	0.0	--
2-3.5'	0.1	3-4' (VOCs, PAHs, RCRA Metals)
4.5-6'	0.1	--
7-8.5'	0.0	--
9.5-11'	0.0	--
12-13.5'	0.0	12-13' (VOCs, PAHs, RCRA Metals)
14.5-16'	0.0	--

Facility/Project Name: Waukesha Water Utility		Local Grid Location of Well <input type="checkbox"/> N. <input type="checkbox"/> E. ft. <input type="checkbox"/> S. ft. <input type="checkbox"/> W.		Well Name: WS-B-1	
License/Permit/Monitoring Number		Local Grid Origin <input type="checkbox"/> (estimated <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. _____ ' _____ " Long. _____ ° _____ ' _____ "		Wis. Unique Well No. _____ DNR Well ID No. _____	
Facility ID		St. Plane 362596.829 ft. N. 2471985.627 ft. E. S/C/N		Date Well Installed 1 0 / 1 7 / 2 0 1 7 m m d d y y y y	
Type of Well Well Code _____ / _____		Section Location of Waste/Source <input type="checkbox"/> E 1/4 of 1/4 of Sec. _____, T. _____ N, R. <input type="checkbox"/> W		Well Installed By: Name (first, last) and Firm Tony Kapugi, Onsite Environmental	
Distance from Waste/Source _____ ft.	Enf. Stds. Apply <input type="checkbox"/>	Location of Well Relative to Waste/Source u Upgradient s Sidegradient d Downgradient Not Known			

A. Protective Pipe, top elevation _____ ft. MSL	1. Cap and lock? _____	Cap, no lock
B. Well Casing, top elevation _____ ft. MSL	2. Protective cover pipe: a. Inside Diameter: _____ in. b. Length: _____ in. c. Material: _____ Cast Iron Other _____	Yes 7 10 Cast Iron Other
C. Land surface elevation 819.26 ft. MSL	d. Additional protection? If yes, describe: Bolted flush-mount cap	Yes
D. Surface seal, bottom _____ ft. MSL or _____ ft.	3. Surface seal: _____ Other: _____	Bentonite Yes
12. USCS classification of soil near screen: GP GM GC GW SW SP SM SC ML MH CL CH Bedrock	4. Material between well casing and protective pipe: _____ Bentonite Other _____	No
13. Sieve analysis performed? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	5. Annular space seal: a. Granular/Chipped Bentonite b. Lbs/gal mud weight.... Bentonite-sand slurry c. Lbs/gal mud weight.... Bentonite slurry d. _____% Bentonite... Bentonite-cement grout e. _____ft ³ volume added for any of the above f. How installed: _____	Yes 33 No No No No No
14. Drilling method used: Rotary 50 Hollow Stem Auger 41 Geoprobe Other	6. Bentonite seal: a. Bentonite granules b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips c. _____ Other	Yes 33 No No
15. Drilling fluid used: Water 0 2 Air 0 1 Drilling Mud 0 3 None 9	7. Fine sand material: Manufacturer, product name & mesh size a. None Used b. Volume added _____ft ³	No No
16. Drilling additives used? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Describe _____	8. Filter pack material: Manufacturer, product name & mesh size a. Red Flint #40 b. Volume added: 0.2 ft ³	No No
17. Source of water (attach analysis, if required) _____	9. Well casing: Flush threaded PVC schedule 40 Flush threaded PVC schedule 80 Other _____	Yes 23 No No
E. Bentonite seal, top _____ ft. MSL or _____ ft.	10. Screen material: a. Screen type: _____ b. Manufacturer: Monoflex c. Slot size: 0.010 in. d. Slotted length: 10 ft.	PVC Factory cut Yes 11 Continuous slot Yes 01 Other No
F. Fine sand, top _____ ft. MSL or 1.0 ft.	11. Backfill material (below filter pack): Sand	
G. Filter pack, top _____ ft. MSL or 1.0 ft.		
H. Screen joint, top _____ ft. MSL or 2.5 ft.		
I. Well bottom _____ ft. MSL or 12.0 ft.		
J. Filter pack, bottom _____ ft. MSL or 12.0 ft.		
K. Borehole, bottom _____ ft. MSL or 18.0 ft.		
L. Borehole, diameter 2.75 in.		
M. O.D. well casing 1.25 in.		
N. I.D. well casing 1.00 in.		

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Tyler Bengtson

Firm

Ramboll

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site #		License/Permit/Monitoring Number N/A		Boring Number WS-B-1	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 10/17/2017		Date Drilling Completed 10/17/2017	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation 819.3 Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 362597 N 2471986 E S/C/N			Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section , T N, R			Lat _____ ' _____ " _____" Long _____ ' _____ " _____"		

Facility ID	County	County Code	Civil Town/City/ or Village
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Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 48			TOPSOIL				12.3						
			1.5	FILL: Gravelly sand, some silt, tannish brown.				5.3						
			3.0	FILL: Silty clay, trace sand, dark brown.				9.5						
			4.5	FILL: Silt, trace clay, black, organic.				14.8						
2 CS	60 48		6.0	FILL: Silty clay, trace sand, dark brown, moist.				9.7						
			7.5	SAND, trace gravel, tannish brown, wet.				5.9						
3 CS	60 60		10.5					5.4						
			12.0		SP			7.6						
4 CS	36 36		15.0					4.8						
			16.5											
			18.0	End of boring at 18 ft. Temporary monitoring well installed.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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












This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site #		License/Permit/Monitoring Number N/A		Boring Number WS-B-2	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 10/17/2017		Date Drilling Completed 10/17/2017	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation 816.1 Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 362144 N 2472086 E S/C/N		Lat ° ' " Long ° ' "		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
1/4 of Section , T N, R					

Facility ID	County	County Code	Civil Town/City/ or Village
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Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 48			TOPSOIL										
		1.5	FILL: Sandy clay, tannish brown, moist.				1.4							
		3.0	Black silt seam at 2.5 ft.				1.1							
2 CS	60 48		4.5	FILL: Silt, black, moist, organic.				1.7						
			FILL: Organic material, shells, wood, some clay, brown, moist.				1.2							
		6.0					1.2							
3 CS	60 54		7.5											
		9.0					1.2							
		10.5	FILL: Clayey organic material, shells, wood, brown.				0.8							
4 CS	36 36		12.0											
		13.5	CLAY , brown, wet.	CL			0.9							
		15.0	SAND , tannish brown, wet.	SP			1.1							
		16.5					1.1							
		18.0	End of boring at 18 ft.				0.2							

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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




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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site #		License/Permit/Monitoring Number N/A		Boring Number WS-B-3	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 10/17/2017		Date Drilling Completed 10/17/2017	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation 814.1 Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 361498 N 2472088 E S/C/N			Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section , T N, R			Lat _____ ' _____" Long _____ ' _____"		



Facility ID	County	County Code	Civil Town/City/ or Village
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Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
1 CS	60 30			<u>TOPSOIL</u>				0.4							
			1.5	<u>FILL:</u> Gravelly silt, brown, dry.				0.5							
			3.0					0.5							
			4.5	<u>FILL:</u> Clay, some silt, blackish brown, moist.				0.4							
2 CS	60 48		6.0	<u>CLAY,</u> brown, moist.	CL			0.4							
			7.5						0.4						
			9.0						0.3						
			10.5	<u>GRAVELLY SAND,</u> brown, wet.	SP			0.3							
3 CS	60 60		12.0						0.3						
			13.5	Gravel seam at 13 ft.					0.3						
			15.0						0.2						
4 CS	36 36		16.5					0.2							
			18.0	End of boring at 18 ft.				0.2							





I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-16	
PROJECT ID No				PAGE No		1 of 1			
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No		DATE STARTED 9/08/17		HORIZONTAL DATUM		VERTICAL DATUM	
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10		DATE COMPLETED 9/08/17		LATITUDE			
CREW CHIEF M. Rhodes		DRILLING RIG CME 45		WisDOT STRUCTURE ID No		LONGITUDE			
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME S. West Ave		NORTHING 362447			
LOG QC BY J. Bruesewitz		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		OFFSET	
COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
								SURFACE ELEVATION 818 ft	
Sample No / Type		Sample Recovery (in)		Blow Counts		N - Value		Depth (ft)	
Elevation (ft)		Soil / Rock Description and Geological Origin for Each Major Unit / Comments		USCS / AASHTO		Graphic		Well Diagram	
PID / FID		Unconfined Comp. Strength Q _p or (Q _u) (tsf)		Liquid Limit (%)		Plasticity Index (%)		Moisture Content (%)	
Notes									
1 SS		20		10 20 27		47		815	
2 SS		12		12 17 10		27		5	
3 SS		16		17 10 3		13		810	
4 SS		10		2 3 3		6		10	
5 SS		18		2 2 3		5		805	
6 SS		12		2 3 5		8		15	
7 SS		18		4 5 8		13		16 (802)	
								End of Boring at 16.0 ft.	
WATER & CAVE-IN OBSERVATION DATA									
WATER ENCOUNTERED DURING DRILLING: 7.5ft. CAVE DEPTH AT COMPLETION: 5.3ft. WET DRY									
WATER LEVEL AT COMPLETION: NMR CAVE DEPTH AFTER 0 HOURS: NMR WET DRY									
WATER LEVEL AFTER 0 HOURS: NMR NE = Not Encountered; NMR = No Measurement Recorded									
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.									

PROJECT NAME Great Water Alliance		 BORING LOG 		BORING No PAGE No RF-B-17 1 of 1	
PROJECT ID No		CONSULTANT PROJECT No		DATE STARTED 9/08/17	
CONSULTANT Greeley & Hansen		DATE STARTED 9/08/17		HORIZONTAL DATUM	
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10		DATE COMPLETED 9/08/17	
CREW CHIEF M. Rhodes		DRILLING RIG CME 45		WISDOT STRUCTURE ID No	
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 3 3/4 HSA		ROADWAY NAME S. West Ave	
LOG QC BY J. Bruesewitz		HAMMER TYPE Auto		EFFICIENCY 96%	
COUNTY 67-Waukesha		TOWNSHIP		RANGE	
		SECTION		1/4 SECTION	
				1/4 SECTION	
				SURFACE ELEVATION 814.7 ft	

Sample No. / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	24	3 4 5 6	9			TOPSOIL (7")									
2 SS	6	4 6 7	13			0.6 (814.1) SAND WITH SILT, brown, moist, (FILL)	SP-SM								
						3.5 (811.2) SAND WITH GRAVEL, gray, wet, loose to medium dense									
3 SS	18	1 1 3	4	5	810										
4 SS	18	4 4 4	8				SP								Fines = 5%
5 SS	0	3 4 7	11	10	805										No recovery split spoon blocked by gravel piece
6 SS	18	5 8 8	16			12.3 (802.4) LEAN CLAY, gray, moist, medium stiff, trace gravel	CL				0.50				
7 SS	8	6 10 17	27	15	800	15 (799.7) SAND WITH SILT AND GRAVEL, gray, wet, medium dense	SP-SM								

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 4ft.		CAVE DEPTH AT COMPLETION: 1.3ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NMR		CAVE DEPTH AFTER 0 HOURS: NMR	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	DRY <input type="checkbox"/>

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

<input type="checkbox"/> Verification Only of Fill and Seal	Route to DNR Bureau:		
	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> Watershed/Wastewater	<input type="checkbox"/> Remediation/Redevelopment
	<input type="checkbox"/> Waste Management	<input type="checkbox"/> Other: _____	

County Waukesha		WI Unique Well # of Removed Well _____	Hicap # _____	Facility Name Waukesha Water Utility
Latitude / Longitude (see instructions) _____ N _____ W		Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM	Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001	Facility ID (FID or PWS) _____
Well Street Address 2000 South West Avenue		License/Permit/Monitoring # _____		
Well City, Village or Town City of Waukesha		Original Well Owner _____		
Subdivision Name _____		Present Well Owner _____		
Well ZIP Code 53189		Mailing Address of Present Owner _____		
City of Present Owner _____		State _____	ZIP Code _____	

Reason for Removal from Service Temporary monitoring well only	WI Unique Well # of Replacement Well _____	p, Liner, Screen, ng ing
--	--	---------------------------------

<input checked="" type="checkbox"/> Monitoring Well	Original Construction Date (mm/dd/yyyy) 10/17/2017	Pump and piping removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Water Well		Liner(s) removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Borehole / Drillhole	If a Well Construction Report is available, please attach.	Liner(s) perforated? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
		Screen removed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Casing left in place? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Construction Type: <input type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input checked="" type="checkbox"/> Other (specify): GeoProbe	Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock	Was casing cut off below surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Did sealing material rise to surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Did material settle after 24 hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
		If yes, was hole retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
		If bentonite chips were used, were they hydrated with water from a known safe source? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Total Well Depth From Ground Surface (ft.) 18'	Casing Diameter (in.) --	Required Method of Placing Sealing Material <input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input checked="" type="checkbox"/> Screened & Poured (Bentonite Chips) <input type="checkbox"/> Other (Explain): _____
--	------------------------------------	---

Lower Drillhole Diameter (in.) 2.5"	Casing Depth (ft.) --	Sealing Materials <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Sand-Cement (Concrete) Grout <input checked="" type="checkbox"/> Bentonite Chips
---	---------------------------------	---

Was well annular space grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	For Monitoring Wells and Monitoring Well Boreholes Only: <input checked="" type="checkbox"/> Bentonite Chips <input type="checkbox"/> Bentonite - Cement Grout <input checked="" type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Sand Slurry
--	---

		(circle one)	Weight
Topsoil	Surface	0.5'	
Granular bentonite	0.5'	18'	

WS-B-1 Borehole Northing: 362596.829 Borehole Easting: 2471985.627

Supervisi			DNR Use Only	
Name of Person or Firm Doing Filling & Sealing Tony Kapugi	License # _____	Date of Filling & Sealing or Verification (mm/dd/yyyy) 11/21/17	Date Received _____	Noted By _____
Street or Route P.O. Box 280		Telephone Number (608) 837-8992	Comments _____	
City Sun Prairie	State WI	ZIP Code 53590	Signature of Person Doing Work 	Date Signed 11/22/17

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☒ Verification Only of Fill and Seal

Route to DNR Bureau:

- ☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

1. Well Location Information

County Waukesha	WI Unique Well # of Removed Well _____	Hicap # _____
Latitude / Longitude (see instructions) _____ N _____ W	Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM	Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001
1/4 / 1/4 or Gov't Lot #	Section _____	Township N
Well Street Address 2000 South West Avenue		Range <input type="checkbox"/> E <input type="checkbox"/> W
Well City, Village or Town City of Waukesha		Well ZIP Code 53189
Subdivision Name _____		Lot # _____

2. Facility / Owner Information

Facility Name Waukesha Water Utility
Facility ID (FID or PWS) _____
License/Permit/Monitoring # _____
Original Well Owner _____
Present Well Owner _____
Mailing Address of Present Owner _____
City of Present Owner _____
State _____
ZIP Code _____

Reason for Removal from Service
Temporary soil boring only

WI Unique Well # of Replacement Well

3. Filled & Sealed Well / Drillhole / Borehole Information

<input type="checkbox"/> Monitoring Well	Original Construction Date (mm/dd/yyyy) 10/17/2017
<input type="checkbox"/> Water Well	If a Well Construction Report is available, please attach. _____
<input checked="" type="checkbox"/> Borehole / Drillhole	
Construction Type: <input type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input checked="" type="checkbox"/> Other (specify): GeoProbe	

Formation Type:

☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.) 18'	Casing Diameter (in.) --
Lower Drillhole Diameter (in.) 2.5"	Casing Depth (ft.) --
Was well annular space grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
If yes, to what depth (feet)? _____	Depth to Water (feet) _____

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Liner(s) removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Liner(s) perforated?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Screen removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Casing left in place?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Was casing cut off below surface?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Did sealing material rise to surface?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Did material settle after 24 hours?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
If yes, was hole retopped?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Required Method of Placing Sealing Material

<input type="checkbox"/> Conductor Pipe-Gravity	<input type="checkbox"/> Conductor Pipe-Pumped
<input type="checkbox"/> Screened & Poured (Bentonite Chips)	<input type="checkbox"/> Other (Explain): _____

Sealing Materials

<input type="checkbox"/> Neal Cement Grout	<input type="checkbox"/> Concrete
<input type="checkbox"/> Sand-Cement (Concrete) Grout	<input type="checkbox"/> Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

<input type="checkbox"/> Bentonite Chips	<input type="checkbox"/> Bentonite - Cement Grout
<input type="checkbox"/> Granular Bentonite	<input type="checkbox"/> Bentonite - Sand Slurry

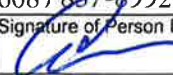
5. Material Used to Fill Well / Drillhole

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Topsoil	Surface	0.5'		
Granular bentonite	0.5'	18'		

6. Comments

WS-B-2 Borehole Northing : 362144.007 Borehole Easting: 2472085.758

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing Tony Kapugi	License # _____	Date of Filling & Sealing or Verification (mm/dd/yyyy) 10/17/2017	DNR Use Only	
Street or Route P.O. Box 280		Telephone Number (608) 837-8992	Date Received _____	Noted By _____
City Sun Prairie		State WI	ZIP Code 53590	Date Signed 11/22/17
Signature of Person Doing Work 				

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☒ Verification Only of Fill and Seal

Route to DNR Bureau:

- ☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

1. Well Location Information

County Waukesha	WI Unique Well # of Removed Well _____	Hicap # _____
Latitude / Longitude (see instructions) _____ N _____ W	Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM	Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001
1/4 / 1/4 or Gov't Lot #	Section _____ Township _____ Range _____ E _____ W	Original Well Owner _____ Present Well Owner _____
Well Street Address 2000 South West Avenue	Well City, Village or Town City of Waukesha	Well ZIP Code 53189
Subdivision Name _____	Lot # _____	Mailing Address of Present Owner _____ City of Present Owner _____ State _____ ZIP Code _____

2. Facility / Owner Information

Facility Name Waukesha Water Utility
Facility ID (FID or PWS) _____
License/Permit/Monitoring # _____
Original Well Owner _____ Present Well Owner _____
Mailing Address of Present Owner _____ City of Present Owner _____ State _____ ZIP Code _____

Reason for Removal from Service

Temporary monitoring well only

WI Unique Well # of Replacement Well

3. Filled & Sealed Well / Drillhole / Borehole Information

<input type="checkbox"/> Monitoring Well	Original Construction Date (mm/dd/yyyy) 10/17/2017
<input type="checkbox"/> Water Well	If a Well Construction Report is available, please attach. _____
<input checked="" type="checkbox"/> Borehole / Drillhole	
Construction Type: <input type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input checked="" type="checkbox"/> Other (specify): GeoProbe	

Formation Type:

☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.) Casing Diameter (in.)

18'

--

Lower Drillhole Diameter (in.)

2.5"

Casing Depth (ft.)

--

Was well annular space grouted? ☐ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)?

Depth to Water (feet)

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Liner(s) removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Liner(s) perforated?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Screen removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Casing left in place?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Was casing cut off below surface?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Did sealing material rise to surface?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Did material settle after 24 hours?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
If yes, was hole retopped?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☐ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials

☐ Neal Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

☐ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

Material	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Topsoil	Surface	0.5'		
Granular bentonite	0.5'	18'		

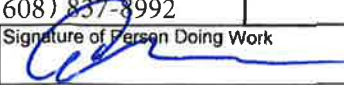
6. Comments

WS-B-3

Borehole Northing : 361497.991

Borehole Easting: 2472088.481

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing Tony Kapugi	License # _____	Date of Filling & Sealing or Verification (mm/dd/yyyy) 10/17/2017	DNR Use Only	
Street or Route P.O. Box 280	Telephone Number (608) 837-8992	Comments _____	Date Received _____	Noted By _____
City Sun Prairie	State WI	ZIP Code 53590	Signature of Person Doing Work 	Date Signed 11/22/17



Appendix B – Laboratory Analytical Results



(NO TEXT FOR THIS PAGE)



07-Dec-2017

Donna Volk
Ramboll Environ US Corporation
175 N Corporate Drive
Suite 160
Brookfield, WI 53045

Re: **21-41365B**

Work Order: **1709471**

Dear Donna,

ALS Environmental received 5 samples on 09-Sep-2017 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 36.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Ramboll Environ US Corporation
Project: 21-41365B
Work Order: 1709471

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1709471-01	RF-B-16 (5-6')	Soil		9/8/2017 11:30	9/9/2017 10:00	<input type="checkbox"/>
1709471-02	RF-B-16 (10-11')	Soil		9/8/2017 11:50	9/9/2017 10:00	<input type="checkbox"/>
1709471-03	RF-B-17 (3-4')	Soil		9/8/2017 13:15	9/9/2017 10:00	<input type="checkbox"/>
1709471-04	RF-B-17 (12-13')	Soil		9/8/2017 13:55	9/9/2017 10:00	<input type="checkbox"/>
1709471-05	Trip Blank	Soil		9/8/2017 13:55	9/9/2017 10:00	<input type="checkbox"/>

Client: Ramboll Environ US Corporation
Project: 21-41365B
Work Order: 1709471

Case Narrative

Samples for the above noted Work Order were received on 09/09/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, sample condition, preservation, and temperature compliance.

In order to ensure compliance with NR 149 criteria, please note the following report format:

- (1) The Limit of Detection (LOD) is reported as the MDL (Method Detection Limit)
- (2) The Limit of Quantitation (LOQ) is reported as the PQL (Practical Quantitation Limit)
- (3) All reported concentrations, including those for the LOD and LOQ, are adjusted for any required dilutions
- (4) All reported concentrations, including those for the LOD and LOQ, are adjusted for moisture content when samples are reported on a dry weight basis.

Samples were analyzed according to the analytical methodology previously documented in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Detail as to the associated samples can be found at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, acronyms, and units utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Wet Chemistry

Batch R220203, Method MOISTURE, Samples 1709471-03B DUP and -04B DUP: RPDs are outside of test control range for moisture, results should be considered estimated.

Client: Ramboll Environ US Corporation
Project: 21-41365B
WorkOrder: 1709471

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-16 (5-6')
Collection Date: 9/8/2017 11:30 AM

Work Order: 1709471
Lab ID: 1709471-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 9/19/17		Analyst: RSH
Mercury	0.0076	J	0.0031	0.010	mg/Kg-dry	1	9/19/2017 13:51
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 9/18/17		Analyst: JF
Arsenic	1.4		0.058	0.19	mg/Kg-dry	1	9/18/2017 17:24
Barium	33		0.055	0.18	mg/Kg-dry	1	9/18/2017 17:24
Cadmium	0.052		0.0032	0.011	mg/Kg-dry	1	9/18/2017 17:24
Chromium	6.0		0.019	0.063	mg/Kg-dry	1	9/18/2017 17:24
Lead	4.4		0.0063	0.020	mg/Kg-dry	1	9/18/2017 17:24
Selenium	1.1		0.12	0.39	mg/Kg-dry	1	9/18/2017 17:24
Silver	0.018		0.0032	0.011	mg/Kg-dry	1	9/18/2017 17:24
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 9/12/17		Analyst: RM
2-Chloronaphthalene	U		4.5	45	µg/Kg-dry	1	9/12/2017 20:24
2-Methylnaphthalene	U		7.4	45	µg/Kg-dry	1	9/12/2017 20:24
Acenaphthene	U		3.2	45	µg/Kg-dry	1	9/12/2017 20:24
Acenaphthylene	U		4.0	45	µg/Kg-dry	1	9/12/2017 20:24
Anthracene	U		1.7	45	µg/Kg-dry	1	9/12/2017 20:24
Benzo(a)anthracene	U		2.8	45	µg/Kg-dry	1	9/12/2017 20:24
Benzo(a)pyrene	U		1.1	45	µg/Kg-dry	1	9/12/2017 20:24
Benzo(b)fluoranthene	U		1.7	45	µg/Kg-dry	1	9/12/2017 20:24
Benzo(g,h,i)perylene	U		3.0	45	µg/Kg-dry	1	9/12/2017 20:24
Benzo(k)fluoranthene	U		2.3	45	µg/Kg-dry	1	9/12/2017 20:24
Chrysene	U		1.7	45	µg/Kg-dry	1	9/12/2017 20:24
Dibenzo(a,h)anthracene	U		1.5	45	µg/Kg-dry	1	9/12/2017 20:24
Fluoranthene	U		1.3	45	µg/Kg-dry	1	9/12/2017 20:24
Fluorene	U		1.5	45	µg/Kg-dry	1	9/12/2017 20:24
Indeno(1,2,3-cd)pyrene	U		1.4	45	µg/Kg-dry	1	9/12/2017 20:24
Naphthalene	U		8.5	45	µg/Kg-dry	1	9/12/2017 20:24
Phenanthrene	U		1.6	45	µg/Kg-dry	1	9/12/2017 20:24
Pyrene	U		1.7	45	µg/Kg-dry	1	9/12/2017 20:24
Surr: 2-Fluorobiphenyl	84.0			20-140	%REC	1	9/12/2017 20:24
Surr: 4-Terphenyl-d14	113			22-172	%REC	1	9/12/2017 20:24
Surr: Nitrobenzene-d5	88.4			8-140	%REC	1	9/12/2017 20:24
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 9/11/17		Analyst: WH
1,1,1-Trichloroethane	U		11	36	µg/Kg-dry	1	9/13/2017 17:40
1,1,2,2-Tetrachloroethane	U		9.0	30	µg/Kg-dry	1	9/13/2017 17:40
1,1,2-Trichloroethane	U		11	37	µg/Kg-dry	1	9/13/2017 17:40
1,1-Dichloroethane	U		9.5	32	µg/Kg-dry	1	9/13/2017 17:40
1,1-Dichloroethene	U		10	33	µg/Kg-dry	1	9/13/2017 17:40

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-16 (5-6')
Collection Date: 9/8/2017 11:30 AM

Work Order: 1709471
Lab ID: 1709471-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		16	55	µg/Kg-dry	1	9/13/2017 17:40
1,2,4-Trichlorobenzene	U		28	92	µg/Kg-dry	1	9/13/2017 17:40
1,2,4-Trimethylbenzene	U		7.5	25	µg/Kg-dry	1	9/13/2017 17:40
1,2-Dibromo-3-chloropropane	U		15	51	µg/Kg-dry	1	9/13/2017 17:40
1,2-Dibromoethane	U		12	42	µg/Kg-dry	1	9/13/2017 17:40
1,2-Dichlorobenzene	U		11	37	µg/Kg-dry	1	9/13/2017 17:40
1,2-Dichloroethane	U		10	34	µg/Kg-dry	1	9/13/2017 17:40
1,2-Dichloropropane	U		10	34	µg/Kg-dry	1	9/13/2017 17:40
1,3,5-Trimethylbenzene	U		16	55	µg/Kg-dry	1	9/13/2017 17:40
1,3-Dichlorobenzene	U		12	40	µg/Kg-dry	1	9/13/2017 17:40
1,4-Dichlorobenzene	U		9.8	33	µg/Kg-dry	1	9/13/2017 17:40
2-Butanone	U		50	170	µg/Kg-dry	1	9/13/2017 17:40
2-Hexanone	U		25	83	µg/Kg-dry	1	9/13/2017 17:40
4-Methyl-2-pentanone	U		27	91	µg/Kg-dry	1	9/13/2017 17:40
Benzene	U		8.5	28	µg/Kg-dry	1	9/13/2017 17:40
Bromochloromethane	U		17	56	µg/Kg-dry	1	9/13/2017 17:40
Bromodichloromethane	U		10	33	µg/Kg-dry	1	9/13/2017 17:40
Bromoform	U		13	44	µg/Kg-dry	1	9/13/2017 17:40
Bromomethane	U		16	54	µg/Kg-dry	1	9/13/2017 17:40
Carbon disulfide	U		13	42	µg/Kg-dry	1	9/13/2017 17:40
Carbon tetrachloride	U		6.6	22	µg/Kg-dry	1	9/13/2017 17:40
Chlorobenzene	U		11	37	µg/Kg-dry	1	9/13/2017 17:40
Chloroethane	U		24	79	µg/Kg-dry	1	9/13/2017 17:40
Chloroform	U		13	42	µg/Kg-dry	1	9/13/2017 17:40
Chloromethane	U		15	50	µg/Kg-dry	1	9/13/2017 17:40
cis-1,2-Dichloroethene	U		11	35	µg/Kg-dry	1	9/13/2017 17:40
cis-1,3-Dichloropropene	U		14	48	µg/Kg-dry	1	9/13/2017 17:40
Cyclohexane	U		19	62	µg/Kg-dry	1	9/13/2017 17:40
Dibromochloromethane	U		8.5	28	µg/Kg-dry	1	9/13/2017 17:40
Dichlorodifluoromethane	U		17	55	µg/Kg-dry	1	9/13/2017 17:40
Ethylbenzene	U		8.7	29	µg/Kg-dry	1	9/13/2017 17:40
Isopropylbenzene	U		15	49	µg/Kg-dry	1	9/13/2017 17:40
m,p-Xylene	U		17	56	µg/Kg-dry	1	9/13/2017 17:40
Methyl tert-butyl ether	U		12	41	µg/Kg-dry	1	9/13/2017 17:40
Methylcyclohexane	U		16	54	µg/Kg-dry	1	9/13/2017 17:40
Methylene chloride	U		17	57	µg/Kg-dry	1	9/13/2017 17:40
Naphthalene	U		6.4	21	µg/Kg-dry	1	9/13/2017 17:40
o-Xylene	U		12	40	µg/Kg-dry	1	9/13/2017 17:40
Styrene	U		26	88	µg/Kg-dry	1	9/13/2017 17:40
Tetrachloroethene	U		18	61	µg/Kg-dry	1	9/13/2017 17:40

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-16 (5-6')
Collection Date: 9/8/2017 11:30 AM

Work Order: 1709471
Lab ID: 1709471-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Toluene	U		12	41	µg/Kg-dry	1	9/13/2017 17:40
trans-1,2-Dichloroethene	U		11	35	µg/Kg-dry	1	9/13/2017 17:40
trans-1,3-Dichloropropene	U		6.7	22	µg/Kg-dry	1	9/13/2017 17:40
Trichloroethene	U		10	33	µg/Kg-dry	1	9/13/2017 17:40
Trichlorofluoromethane	U		7.2	24	µg/Kg-dry	1	9/13/2017 17:40
Vinyl chloride	U		12	40	µg/Kg-dry	1	9/13/2017 17:40
Xylenes, Total	U		29	96	µg/Kg-dry	1	9/13/2017 17:40
Surr: 1,2-Dichloroethane-d4	93.8			70-130	%REC	1	9/13/2017 17:40
Surr: 4-Bromofluorobenzene	94.6			70-130	%REC	1	9/13/2017 17:40
Surr: Dibromofluoromethane	93.8			70-130	%REC	1	9/13/2017 17:40
Surr: Toluene-d8	96.4			70-130	%REC	1	9/13/2017 17:40
MOISTURE			Method: SW3550C				Analyst: BTG
Moisture	11		0.025	0.050	% of sample	1	9/17/2017 17:41

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-16 (10-11')
Collection Date: 9/8/2017 11:50 AM

Work Order: 1709471
Lab ID: 1709471-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 9/19/17		Analyst: RSH
Mercury	U		0.0032	0.011	mg/Kg-dry	1	9/19/2017 13:53
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 9/18/17		Analyst: JF
Arsenic	0.76		0.068	0.22	mg/Kg-dry	1	9/18/2017 17:25
Barium	9.1		0.064	0.21	mg/Kg-dry	1	9/18/2017 17:25
Cadmium	0.049		0.0036	0.013	mg/Kg-dry	1	9/18/2017 17:25
Chromium	4.9		0.022	0.073	mg/Kg-dry	1	9/18/2017 17:25
Lead	2.7		0.0073	0.024	mg/Kg-dry	1	9/18/2017 17:25
Selenium	0.55		0.14	0.46	mg/Kg-dry	1	9/18/2017 17:25
Silver	0.0094	J	0.0036	0.013	mg/Kg-dry	1	9/18/2017 17:25
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 9/12/17		Analyst: RM
2-Chloronaphthalene	U		4.7	47	µg/Kg-dry	1	9/12/2017 20:38
2-Methylnaphthalene	U		7.6	47	µg/Kg-dry	1	9/12/2017 20:38
Acenaphthene	U		3.3	47	µg/Kg-dry	1	9/12/2017 20:38
Acenaphthylene	U		4.1	47	µg/Kg-dry	1	9/12/2017 20:38
Anthracene	U		1.7	47	µg/Kg-dry	1	9/12/2017 20:38
Benzo(a)anthracene	U		2.9	47	µg/Kg-dry	1	9/12/2017 20:38
Benzo(a)pyrene	U		1.2	47	µg/Kg-dry	1	9/12/2017 20:38
Benzo(b)fluoranthene	U		1.8	47	µg/Kg-dry	1	9/12/2017 20:38
Benzo(g,h,i)perylene	U		3.1	47	µg/Kg-dry	1	9/12/2017 20:38
Benzo(k)fluoranthene	U		2.4	47	µg/Kg-dry	1	9/12/2017 20:38
Chrysene	U		1.8	47	µg/Kg-dry	1	9/12/2017 20:38
Dibenzo(a,h)anthracene	U		1.5	47	µg/Kg-dry	1	9/12/2017 20:38
Fluoranthene	U		1.3	47	µg/Kg-dry	1	9/12/2017 20:38
Fluorene	U		1.5	47	µg/Kg-dry	1	9/12/2017 20:38
Indeno(1,2,3-cd)pyrene	U		1.4	47	µg/Kg-dry	1	9/12/2017 20:38
Naphthalene	U		8.8	47	µg/Kg-dry	1	9/12/2017 20:38
Phenanthrene	U		1.6	47	µg/Kg-dry	1	9/12/2017 20:38
Pyrene	U		1.7	47	µg/Kg-dry	1	9/12/2017 20:38
Surr: 2-Fluorobiphenyl	89.7			20-140	%REC	1	9/12/2017 20:38
Surr: 4-Terphenyl-d14	130			22-172	%REC	1	9/12/2017 20:38
Surr: Nitrobenzene-d5	102			8-140	%REC	1	9/12/2017 20:38
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 9/11/17		Analyst: WH
1,1,1-Trichloroethane	U		11	36	µg/Kg-dry	1	9/13/2017 05:30
1,1,2,2-Tetrachloroethane	U		9.2	31	µg/Kg-dry	1	9/13/2017 05:30
1,1,2-Trichloroethane	U		11	38	µg/Kg-dry	1	9/13/2017 05:30
1,1-Dichloroethane	U		9.7	32	µg/Kg-dry	1	9/13/2017 05:30
1,1-Dichloroethene	U		10	34	µg/Kg-dry	1	9/13/2017 05:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-16 (10-11')
Collection Date: 9/8/2017 11:50 AM

Work Order: 1709471
Lab ID: 1709471-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		17	56	µg/Kg-dry	1	9/13/2017 05:30
1,2,4-Trichlorobenzene	U		28	94	µg/Kg-dry	1	9/13/2017 05:30
1,2,4-Trimethylbenzene	U		7.7	26	µg/Kg-dry	1	9/13/2017 05:30
1,2-Dibromo-3-chloropropane	U		15	52	µg/Kg-dry	1	9/13/2017 05:30
1,2-Dibromoethane	U		13	43	µg/Kg-dry	1	9/13/2017 05:30
1,2-Dichlorobenzene	U		11	38	µg/Kg-dry	1	9/13/2017 05:30
1,2-Dichloroethane	U		10	35	µg/Kg-dry	1	9/13/2017 05:30
1,2-Dichloropropane	U		11	35	µg/Kg-dry	1	9/13/2017 05:30
1,3,5-Trimethylbenzene	U		17	56	µg/Kg-dry	1	9/13/2017 05:30
1,3-Dichlorobenzene	U		12	41	µg/Kg-dry	1	9/13/2017 05:30
1,4-Dichlorobenzene	U		10	33	µg/Kg-dry	1	9/13/2017 05:30
2-Butanone	U		51	170	µg/Kg-dry	1	9/13/2017 05:30
2-Hexanone	U		25	84	µg/Kg-dry	1	9/13/2017 05:30
4-Methyl-2-pentanone	U		28	93	µg/Kg-dry	1	9/13/2017 05:30
Benzene	U		8.6	29	µg/Kg-dry	1	9/13/2017 05:30
Bromochloromethane	U		17	57	µg/Kg-dry	1	9/13/2017 05:30
Bromodichloromethane	U		10	34	µg/Kg-dry	1	9/13/2017 05:30
Bromoform	U		14	45	µg/Kg-dry	1	9/13/2017 05:30
Bromomethane	U		17	55	µg/Kg-dry	1	9/13/2017 05:30
Carbon disulfide	U		13	43	µg/Kg-dry	1	9/13/2017 05:30
Carbon tetrachloride	U		6.8	23	µg/Kg-dry	1	9/13/2017 05:30
Chlorobenzene	U		11	38	µg/Kg-dry	1	9/13/2017 05:30
Chloroethane	U		24	81	µg/Kg-dry	1	9/13/2017 05:30
Chloroform	U		13	43	µg/Kg-dry	1	9/13/2017 05:30
Chloromethane	U		15	51	µg/Kg-dry	1	9/13/2017 05:30
cis-1,2-Dichloroethene	U		11	36	µg/Kg-dry	1	9/13/2017 05:30
cis-1,3-Dichloropropene	U		15	49	µg/Kg-dry	1	9/13/2017 05:30
Cyclohexane	U		19	64	µg/Kg-dry	1	9/13/2017 05:30
Dibromochloromethane	U		8.7	29	µg/Kg-dry	1	9/13/2017 05:30
Dichlorodifluoromethane	U		17	56	µg/Kg-dry	1	9/13/2017 05:30
Ethylbenzene	U		8.9	30	µg/Kg-dry	1	9/13/2017 05:30
Isopropylbenzene	U		15	50	µg/Kg-dry	1	9/13/2017 05:30
m,p-Xylene	U		17	57	µg/Kg-dry	1	9/13/2017 05:30
Methyl tert-butyl ether	U		12	41	µg/Kg-dry	1	9/13/2017 05:30
Methylcyclohexane	U		17	55	µg/Kg-dry	1	9/13/2017 05:30
Methylene chloride	U		17	58	µg/Kg-dry	1	9/13/2017 05:30
Naphthalene	U		6.5	22	µg/Kg-dry	1	9/13/2017 05:30
o-Xylene	U		12	41	µg/Kg-dry	1	9/13/2017 05:30
Styrene	U		27	90	µg/Kg-dry	1	9/13/2017 05:30
Tetrachloroethene	U		19	63	µg/Kg-dry	1	9/13/2017 05:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-16 (10-11')
Collection Date: 9/8/2017 11:50 AM

Work Order: 1709471
Lab ID: 1709471-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Toluene	U		13	42	µg/Kg-dry	1	9/13/2017 05:30
trans-1,2-Dichloroethene	U		11	36	µg/Kg-dry	1	9/13/2017 05:30
trans-1,3-Dichloropropene	U		6.8	23	µg/Kg-dry	1	9/13/2017 05:30
Trichloroethene	U		10	34	µg/Kg-dry	1	9/13/2017 05:30
Trichlorofluoromethane	U		7.3	24	µg/Kg-dry	1	9/13/2017 05:30
Vinyl chloride	U		12	40	µg/Kg-dry	1	9/13/2017 05:30
Xylenes, Total	U		30	98	µg/Kg-dry	1	9/13/2017 05:30
Surr: 1,2-Dichloroethane-d4	94.9			70-130	%REC	1	9/13/2017 05:30
Surr: 4-Bromofluorobenzene	98.2			70-130	%REC	1	9/13/2017 05:30
Surr: Dibromofluoromethane	95.4			70-130	%REC	1	9/13/2017 05:30
Surr: Toluene-d8	97.8			70-130	%REC	1	9/13/2017 05:30
MOISTURE			Method: SW3550C				Analyst: BTG
Moisture	12		0.025	0.050	% of sample	1	9/17/2017 17:41

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-17 (3-4')
Collection Date: 9/8/2017 01:15 PM

Work Order: 1709471
Lab ID: 1709471-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 9/19/17		Analyst: RSH
Mercury	U		0.0033	0.011	mg/Kg-dry	1	9/19/2017 13:56
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 9/18/17		Analyst: JF
Arsenic	1.5		0.061	0.20	mg/Kg-dry	1	9/18/2017 17:27
Barium	14		0.058	0.19	mg/Kg-dry	1	9/18/2017 17:27
Cadmium	0.030		0.0033	0.012	mg/Kg-dry	1	9/18/2017 17:27
Chromium	5.0		0.020	0.066	mg/Kg-dry	1	9/18/2017 17:27
Lead	3.8		0.0066	0.021	mg/Kg-dry	1	9/18/2017 17:27
Selenium	0.77		0.12	0.41	mg/Kg-dry	1	9/18/2017 17:27
Silver	0.0086	J	0.0033	0.012	mg/Kg-dry	1	9/18/2017 17:27
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 9/12/17		Analyst: RM
2-Chloronaphthalene	U		4.7	48	µg/Kg-dry	1	9/12/2017 20:53
2-Methylnaphthalene	U		7.8	48	µg/Kg-dry	1	9/12/2017 20:53
Acenaphthene	U		3.4	48	µg/Kg-dry	1	9/12/2017 20:53
Acenaphthylene	U		4.2	48	µg/Kg-dry	1	9/12/2017 20:53
Anthracene	93		1.7	48	µg/Kg-dry	1	9/12/2017 20:53
Benzo(a)anthracene	100		2.9	48	µg/Kg-dry	1	9/12/2017 20:53
Benzo(a)pyrene	77		1.2	48	µg/Kg-dry	1	9/12/2017 20:53
Benzo(b)fluoranthene	180		1.8	48	µg/Kg-dry	1	9/12/2017 20:53
Benzo(g,h,i)perylene	94		3.2	48	µg/Kg-dry	1	9/12/2017 20:53
Benzo(k)fluoranthene	130		2.5	48	µg/Kg-dry	1	9/12/2017 20:53
Chrysene	140		1.8	48	µg/Kg-dry	1	9/12/2017 20:53
Dibenzo(a,h)anthracene	56		1.6	48	µg/Kg-dry	1	9/12/2017 20:53
Fluoranthene	330		1.4	48	µg/Kg-dry	1	9/12/2017 20:53
Fluorene	U		1.6	48	µg/Kg-dry	1	9/12/2017 20:53
Indeno(1,2,3-cd)pyrene	83		1.5	48	µg/Kg-dry	1	9/12/2017 20:53
Naphthalene	U		8.9	48	µg/Kg-dry	1	9/12/2017 20:53
Phenanthrene	85		1.6	48	µg/Kg-dry	1	9/12/2017 20:53
Pyrene	270		1.7	48	µg/Kg-dry	1	9/12/2017 20:53
Surr: 2-Fluorobiphenyl	82.6			20-140	%REC	1	9/12/2017 20:53
Surr: 4-Terphenyl-d14	103			22-172	%REC	1	9/12/2017 20:53
Surr: Nitrobenzene-d5	84.5			8-140	%REC	1	9/12/2017 20:53
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 9/11/17		Analyst: WH
1,1,1-Trichloroethane	U		11	38	µg/Kg-dry	1	9/13/2017 05:51
1,1,2,2-Tetrachloroethane	U		9.6	32	µg/Kg-dry	1	9/13/2017 05:51
1,1,2-Trichloroethane	U		12	40	µg/Kg-dry	1	9/13/2017 05:51
1,1-Dichloroethane	U		10	34	µg/Kg-dry	1	9/13/2017 05:51
1,1-Dichloroethene	U		11	36	µg/Kg-dry	1	9/13/2017 05:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-17 (3-4')
Collection Date: 9/8/2017 01:15 PM

Work Order: 1709471
Lab ID: 1709471-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		18	58	µg/Kg-dry	1	9/13/2017 05:51
1,2,4-Trichlorobenzene	U		29	98	µg/Kg-dry	1	9/13/2017 05:51
1,2,4-Trimethylbenzene	U		8.0	27	µg/Kg-dry	1	9/13/2017 05:51
1,2-Dibromo-3-chloropropane	U		16	54	µg/Kg-dry	1	9/13/2017 05:51
1,2-Dibromoethane	U		13	44	µg/Kg-dry	1	9/13/2017 05:51
1,2-Dichlorobenzene	U		12	39	µg/Kg-dry	1	9/13/2017 05:51
1,2-Dichloroethane	U		11	36	µg/Kg-dry	1	9/13/2017 05:51
1,2-Dichloropropane	U		11	37	µg/Kg-dry	1	9/13/2017 05:51
1,3,5-Trimethylbenzene	U		17	58	µg/Kg-dry	1	9/13/2017 05:51
1,3-Dichlorobenzene	U		13	43	µg/Kg-dry	1	9/13/2017 05:51
1,4-Dichlorobenzene	U		10	35	µg/Kg-dry	1	9/13/2017 05:51
2-Butanone	U		54	180	µg/Kg-dry	1	9/13/2017 05:51
2-Hexanone	U		26	88	µg/Kg-dry	1	9/13/2017 05:51
4-Methyl-2-pentanone	U		29	97	µg/Kg-dry	1	9/13/2017 05:51
Benzene	U		9.0	30	µg/Kg-dry	1	9/13/2017 05:51
Bromochloromethane	U		18	59	µg/Kg-dry	1	9/13/2017 05:51
Bromodichloromethane	U		11	36	µg/Kg-dry	1	9/13/2017 05:51
Bromoform	U		14	47	µg/Kg-dry	1	9/13/2017 05:51
Bromomethane	U		17	57	µg/Kg-dry	1	9/13/2017 05:51
Carbon disulfide	U		13	45	µg/Kg-dry	1	9/13/2017 05:51
Carbon tetrachloride	U		7.1	23	µg/Kg-dry	1	9/13/2017 05:51
Chlorobenzene	U		12	40	µg/Kg-dry	1	9/13/2017 05:51
Chloroethane	U		25	84	µg/Kg-dry	1	9/13/2017 05:51
Chloroform	U		13	45	µg/Kg-dry	1	9/13/2017 05:51
Chloromethane	U		16	54	µg/Kg-dry	1	9/13/2017 05:51
cis-1,2-Dichloroethene	U		11	38	µg/Kg-dry	1	9/13/2017 05:51
cis-1,3-Dichloropropene	U		15	51	µg/Kg-dry	1	9/13/2017 05:51
Cyclohexane	U		20	66	µg/Kg-dry	1	9/13/2017 05:51
Dibromochloromethane	U		9.1	30	µg/Kg-dry	1	9/13/2017 05:51
Dichlorodifluoromethane	U		18	59	µg/Kg-dry	1	9/13/2017 05:51
Ethylbenzene	U		9.3	31	µg/Kg-dry	1	9/13/2017 05:51
Isopropylbenzene	U		16	52	µg/Kg-dry	1	9/13/2017 05:51
m,p-Xylene	U		18	60	µg/Kg-dry	1	9/13/2017 05:51
Methyl tert-butyl ether	U		13	43	µg/Kg-dry	1	9/13/2017 05:51
Methylcyclohexane	U		17	57	µg/Kg-dry	1	9/13/2017 05:51
Methylene chloride	U		18	61	µg/Kg-dry	1	9/13/2017 05:51
Naphthalene	U		6.8	23	µg/Kg-dry	1	9/13/2017 05:51
o-Xylene	U		13	43	µg/Kg-dry	1	9/13/2017 05:51
Styrene	U		28	94	µg/Kg-dry	1	9/13/2017 05:51
Tetrachloroethene	U		20	65	µg/Kg-dry	1	9/13/2017 05:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-17 (3-4')
Collection Date: 9/8/2017 01:15 PM

Work Order: 1709471
Lab ID: 1709471-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Toluene	U		13	44	µg/Kg-dry	1	9/13/2017 05:51
trans-1,2-Dichloroethene	U		11	38	µg/Kg-dry	1	9/13/2017 05:51
trans-1,3-Dichloropropene	U		7.1	24	µg/Kg-dry	1	9/13/2017 05:51
Trichloroethene	U		11	35	µg/Kg-dry	1	9/13/2017 05:51
Trichlorofluoromethane	U		7.6	25	µg/Kg-dry	1	9/13/2017 05:51
Vinyl chloride	U		13	42	µg/Kg-dry	1	9/13/2017 05:51
Xylenes, Total	U		31	100	µg/Kg-dry	1	9/13/2017 05:51
Surr: 1,2-Dichloroethane-d4	93.4			70-130	%REC	1	9/13/2017 05:51
Surr: 4-Bromofluorobenzene	94.2			70-130	%REC	1	9/13/2017 05:51
Surr: Dibromofluoromethane	90.8			70-130	%REC	1	9/13/2017 05:51
Surr: Toluene-d8	99.0			70-130	%REC	1	9/13/2017 05:51
MOISTURE			Method: SW3550C				Analyst: BTG
Moisture	14		0.025	0.050	% of sample	1	9/17/2017 17:41

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-17 (12-13')
Collection Date: 9/8/2017 01:55 PM

Work Order: 1709471
Lab ID: 1709471-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 9/19/17		Analyst: RSH
Mercury	0.0067	J	0.0029	0.0096	mg/Kg-dry	1	9/19/2017 13:58
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 9/18/17		Analyst: JF
Arsenic	1.9		0.056	0.19	mg/Kg-dry	1	9/18/2017 17:29
Barium	26		0.053	0.18	mg/Kg-dry	1	9/18/2017 17:29
Cadmium	0.0058	J	0.0031	0.011	mg/Kg-dry	1	9/18/2017 17:29
Chromium	8.2		0.018	0.061	mg/Kg-dry	1	9/18/2017 17:29
Lead	5.7		0.0061	0.020	mg/Kg-dry	1	9/18/2017 17:29
Selenium	0.81		0.11	0.38	mg/Kg-dry	1	9/18/2017 17:29
Silver	0.014		0.0031	0.011	mg/Kg-dry	1	9/18/2017 17:29
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 9/12/17		Analyst: RM
2-Chloronaphthalene	U		4.5	46	µg/Kg-dry	1	9/12/2017 21:07
2-Methylnaphthalene	U		7.4	46	µg/Kg-dry	1	9/12/2017 21:07
Acenaphthene	U		3.2	46	µg/Kg-dry	1	9/12/2017 21:07
Acenaphthylene	U		4.0	46	µg/Kg-dry	1	9/12/2017 21:07
Anthracene	U		1.7	46	µg/Kg-dry	1	9/12/2017 21:07
Benzo(a)anthracene	U		2.8	46	µg/Kg-dry	1	9/12/2017 21:07
Benzo(a)pyrene	U		1.1	46	µg/Kg-dry	1	9/12/2017 21:07
Benzo(b)fluoranthene	U		1.7	46	µg/Kg-dry	1	9/12/2017 21:07
Benzo(g,h,i)perylene	U		3.1	46	µg/Kg-dry	1	9/12/2017 21:07
Benzo(k)fluoranthene	U		2.4	46	µg/Kg-dry	1	9/12/2017 21:07
Chrysene	U		1.7	46	µg/Kg-dry	1	9/12/2017 21:07
Dibenzo(a,h)anthracene	U		1.5	46	µg/Kg-dry	1	9/12/2017 21:07
Fluoranthene	U		1.3	46	µg/Kg-dry	1	9/12/2017 21:07
Fluorene	U		1.5	46	µg/Kg-dry	1	9/12/2017 21:07
Indeno(1,2,3-cd)pyrene	U		1.4	46	µg/Kg-dry	1	9/12/2017 21:07
Naphthalene	U		8.6	46	µg/Kg-dry	1	9/12/2017 21:07
Phenanthrene	U		1.6	46	µg/Kg-dry	1	9/12/2017 21:07
Pyrene	U		1.7	46	µg/Kg-dry	1	9/12/2017 21:07
Surr: 2-Fluorobiphenyl	95.0			20-140	%REC	1	9/12/2017 21:07
Surr: 4-Terphenyl-d14	128			22-172	%REC	1	9/12/2017 21:07
Surr: Nitrobenzene-d5	108			8-140	%REC	1	9/12/2017 21:07
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 9/11/17		Analyst: WH
1,1,1-Trichloroethane	U		11	36	µg/Kg-dry	1	9/13/2017 06:12
1,1,2,2-Tetrachloroethane	U		9.0	30	µg/Kg-dry	1	9/13/2017 06:12
1,1,2-Trichloroethane	U		11	37	µg/Kg-dry	1	9/13/2017 06:12
1,1-Dichloroethane	U		9.5	32	µg/Kg-dry	1	9/13/2017 06:12
1,1-Dichloroethene	U		10	33	µg/Kg-dry	1	9/13/2017 06:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-17 (12-13')
Collection Date: 9/8/2017 01:55 PM

Work Order: 1709471
Lab ID: 1709471-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		16	55	µg/Kg-dry	1	9/13/2017 06:12
1,2,4-Trichlorobenzene	U		28	92	µg/Kg-dry	1	9/13/2017 06:12
1,2,4-Trimethylbenzene	U		7.5	25	µg/Kg-dry	1	9/13/2017 06:12
1,2-Dibromo-3-chloropropane	U		15	51	µg/Kg-dry	1	9/13/2017 06:12
1,2-Dibromoethane	U		12	42	µg/Kg-dry	1	9/13/2017 06:12
1,2-Dichlorobenzene	U		11	37	µg/Kg-dry	1	9/13/2017 06:12
1,2-Dichloroethane	U		10	34	µg/Kg-dry	1	9/13/2017 06:12
1,2-Dichloropropane	U		10	34	µg/Kg-dry	1	9/13/2017 06:12
1,3,5-Trimethylbenzene	U		16	55	µg/Kg-dry	1	9/13/2017 06:12
1,3-Dichlorobenzene	U		12	40	µg/Kg-dry	1	9/13/2017 06:12
1,4-Dichlorobenzene	U		9.8	33	µg/Kg-dry	1	9/13/2017 06:12
2-Butanone	U		50	170	µg/Kg-dry	1	9/13/2017 06:12
2-Hexanone	U		25	83	µg/Kg-dry	1	9/13/2017 06:12
4-Methyl-2-pentanone	U		27	91	µg/Kg-dry	1	9/13/2017 06:12
Benzene	U		8.5	28	µg/Kg-dry	1	9/13/2017 06:12
Bromochloromethane	U		17	56	µg/Kg-dry	1	9/13/2017 06:12
Bromodichloromethane	U		10	33	µg/Kg-dry	1	9/13/2017 06:12
Bromoform	U		13	44	µg/Kg-dry	1	9/13/2017 06:12
Bromomethane	U		16	54	µg/Kg-dry	1	9/13/2017 06:12
Carbon disulfide	U		13	42	µg/Kg-dry	1	9/13/2017 06:12
Carbon tetrachloride	U		6.6	22	µg/Kg-dry	1	9/13/2017 06:12
Chlorobenzene	U		11	37	µg/Kg-dry	1	9/13/2017 06:12
Chloroethane	U		24	79	µg/Kg-dry	1	9/13/2017 06:12
Chloroform	U		13	42	µg/Kg-dry	1	9/13/2017 06:12
Chloromethane	U		15	50	µg/Kg-dry	1	9/13/2017 06:12
cis-1,2-Dichloroethene	U		11	35	µg/Kg-dry	1	9/13/2017 06:12
cis-1,3-Dichloropropene	U		14	48	µg/Kg-dry	1	9/13/2017 06:12
Cyclohexane	U		19	62	µg/Kg-dry	1	9/13/2017 06:12
Dibromochloromethane	U		8.5	28	µg/Kg-dry	1	9/13/2017 06:12
Dichlorodifluoromethane	U		17	55	µg/Kg-dry	1	9/13/2017 06:12
Ethylbenzene	U		8.7	29	µg/Kg-dry	1	9/13/2017 06:12
Isopropylbenzene	U		15	49	µg/Kg-dry	1	9/13/2017 06:12
m,p-Xylene	U		17	56	µg/Kg-dry	1	9/13/2017 06:12
Methyl tert-butyl ether	U		12	41	µg/Kg-dry	1	9/13/2017 06:12
Methylcyclohexane	U		16	54	µg/Kg-dry	1	9/13/2017 06:12
Methylene chloride	U		17	57	µg/Kg-dry	1	9/13/2017 06:12
Naphthalene	U		6.4	21	µg/Kg-dry	1	9/13/2017 06:12
o-Xylene	U		12	40	µg/Kg-dry	1	9/13/2017 06:12
Styrene	U		26	88	µg/Kg-dry	1	9/13/2017 06:12
Tetrachloroethene	U		18	61	µg/Kg-dry	1	9/13/2017 06:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-17 (12-13')
Collection Date: 9/8/2017 01:55 PM

Work Order: 1709471
Lab ID: 1709471-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Toluene	U		12	41	µg/Kg-dry	1	9/13/2017 06:12
trans-1,2-Dichloroethene	U		11	35	µg/Kg-dry	1	9/13/2017 06:12
trans-1,3-Dichloropropene	U		6.7	22	µg/Kg-dry	1	9/13/2017 06:12
Trichloroethene	U		10	33	µg/Kg-dry	1	9/13/2017 06:12
Trichlorofluoromethane	U		7.2	24	µg/Kg-dry	1	9/13/2017 06:12
Vinyl chloride	U		12	40	µg/Kg-dry	1	9/13/2017 06:12
Xylenes, Total	U		29	96	µg/Kg-dry	1	9/13/2017 06:12
Surr: 1,2-Dichloroethane-d4	94.7			70-130	%REC	1	9/13/2017 06:12
Surr: 4-Bromofluorobenzene	97.1			70-130	%REC	1	9/13/2017 06:12
Surr: Dibromofluoromethane	95.1			70-130	%REC	1	9/13/2017 06:12
Surr: Toluene-d8	100			70-130	%REC	1	9/13/2017 06:12
MOISTURE			Method: SW3550C				Analyst: BTG
Moisture	11		0.025	0.050	% of sample	1	9/17/2017 17:41

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: Trip Blank
Collection Date: 9/8/2017 01:55 PM

Work Order: 1709471
Lab ID: 1709471-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 9/11/17		Analyst: WH	
1,1,1-Trichloroethane	U		8.6	28	µg/Kg-dry	1	9/13/2017 06:33
1,1,2,2-Tetrachloroethane	U		7.2	24	µg/Kg-dry	1	9/13/2017 06:33
1,1,2-Trichloroethane	U		9.0	30	µg/Kg-dry	1	9/13/2017 06:33
1,1-Dichloroethane	U		7.6	25	µg/Kg-dry	1	9/13/2017 06:33
1,1-Dichloroethene	U		8.0	27	µg/Kg-dry	1	9/13/2017 06:33
1,2,3-Trichlorobenzene	U		13	44	µg/Kg-dry	1	9/13/2017 06:33
1,2,4-Trichlorobenzene	U		22	74	µg/Kg-dry	1	9/13/2017 06:33
1,2,4-Trimethylbenzene	U		6.0	20	µg/Kg-dry	1	9/13/2017 06:33
1,2-Dibromo-3-chloropropane	U		12	41	µg/Kg-dry	1	9/13/2017 06:33
1,2-Dibromoethane	U		10	33	µg/Kg-dry	1	9/13/2017 06:33
1,2-Dichlorobenzene	U		8.9	30	µg/Kg-dry	1	9/13/2017 06:33
1,2-Dichloroethane	U		8.2	27	µg/Kg-dry	1	9/13/2017 06:33
1,2-Dichloropropane	U		8.3	28	µg/Kg-dry	1	9/13/2017 06:33
1,3,5-Trimethylbenzene	U		13	44	µg/Kg-dry	1	9/13/2017 06:33
1,3-Dichlorobenzene	U		9.6	32	µg/Kg-dry	1	9/13/2017 06:33
1,4-Dichlorobenzene	U		7.8	26	µg/Kg-dry	1	9/13/2017 06:33
2-Butanone	U		40	130	µg/Kg-dry	1	9/13/2017 06:33
2-Hexanone	U		20	66	µg/Kg-dry	1	9/13/2017 06:33
4-Methyl-2-pentanone	U		22	73	µg/Kg-dry	1	9/13/2017 06:33
Benzene	U		6.8	23	µg/Kg-dry	1	9/13/2017 06:33
Bromochloromethane	U		13	45	µg/Kg-dry	1	9/13/2017 06:33
Bromodichloromethane	U		8.0	27	µg/Kg-dry	1	9/13/2017 06:33
Bromoform	U		11	35	µg/Kg-dry	1	9/13/2017 06:33
Bromomethane	U		13	43	µg/Kg-dry	1	9/13/2017 06:33
Carbon disulfide	U		10	34	µg/Kg-dry	1	9/13/2017 06:33
Carbon tetrachloride	U		5.3	18	µg/Kg-dry	1	9/13/2017 06:33
Chlorobenzene	U		9.0	30	µg/Kg-dry	1	9/13/2017 06:33
Chloroethane	U		19	64	µg/Kg-dry	1	9/13/2017 06:33
Chloroform	U		10	34	µg/Kg-dry	1	9/13/2017 06:33
Chloromethane	U		12	40	µg/Kg-dry	1	9/13/2017 06:33
cis-1,2-Dichloroethene	U		8.5	28	µg/Kg-dry	1	9/13/2017 06:33
cis-1,3-Dichloropropene	U		11	38	µg/Kg-dry	1	9/13/2017 06:33
Cyclohexane	U		15	50	µg/Kg-dry	1	9/13/2017 06:33
Dibromochloromethane	U		6.8	23	µg/Kg-dry	1	9/13/2017 06:33
Dichlorodifluoromethane	U		13	44	µg/Kg-dry	1	9/13/2017 06:33
Ethylbenzene	U		7.0	23	µg/Kg-dry	1	9/13/2017 06:33
Isopropylbenzene	U		12	39	µg/Kg-dry	1	9/13/2017 06:33
m,p-Xylene	U		13	45	µg/Kg-dry	1	9/13/2017 06:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: Trip Blank
Collection Date: 9/8/2017 01:55 PM

Work Order: 1709471
Lab ID: 1709471-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		9.8	32	µg/Kg-dry	1	9/13/2017 06:33
Methylcyclohexane	U		13	43	µg/Kg-dry	1	9/13/2017 06:33
Methylene chloride	U		14	46	µg/Kg-dry	1	9/13/2017 06:33
Naphthalene	U		5.1	17	µg/Kg-dry	1	9/13/2017 06:33
o-Xylene	U		9.7	32	µg/Kg-dry	1	9/13/2017 06:33
Styrene	U		21	71	µg/Kg-dry	1	9/13/2017 06:33
Tetrachloroethene	U		15	49	µg/Kg-dry	1	9/13/2017 06:33
Toluene	U		9.9	33	µg/Kg-dry	1	9/13/2017 06:33
trans-1,2-Dichloroethene	U		8.5	28	µg/Kg-dry	1	9/13/2017 06:33
trans-1,3-Dichloropropene	U		5.4	18	µg/Kg-dry	1	9/13/2017 06:33
Trichloroethene	U		8.0	27	µg/Kg-dry	1	9/13/2017 06:33
Trichlorofluoromethane	U		5.8	19	µg/Kg-dry	1	9/13/2017 06:33
Vinyl chloride	U		9.5	32	µg/Kg-dry	1	9/13/2017 06:33
Xylenes, Total	U		23	77	µg/Kg-dry	1	9/13/2017 06:33
Surr: 1,2-Dichloroethane-d4	94.0			70-130	%REC	1	9/13/2017 06:33
Surr: 4-Bromofluorobenzene	94.4			70-130	%REC	1	9/13/2017 06:33
Surr: Dibromofluoromethane	94.0			70-130	%REC	1	9/13/2017 06:33
Surr: Toluene-d8	98.0			70-130	%REC	1	9/13/2017 06:33

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107594** Instrument ID **HG1** Method: **SW7471B**

MBLK		Sample ID: MBLK-107594-107594				Units: mg/Kg		Analysis Date: 9/19/2017 01:46 PM		
Client ID:		Run ID: HG1_170919A				SeqNo: 4647667		Prep Date: 9/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

LCS		Sample ID: LCS-107594-107594				Units: mg/Kg		Analysis Date: 9/19/2017 01:48 PM		
Client ID:		Run ID: HG1_170919A				SeqNo: 4647668		Prep Date: 9/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1683 0.020 0.1665 0 101 80-120 0

MS		Sample ID: 1709845-19BMS				Units: mg/Kg		Analysis Date: 9/19/2017 02:46 PM		
Client ID:		Run ID: HG1_170919A				SeqNo: 4647690		Prep Date: 9/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1935 0.016 0.1306 0.04666 112 75-125 0

MSD		Sample ID: 1709845-19BMSD				Units: mg/Kg		Analysis Date: 9/19/2017 02:52 PM		
Client ID:		Run ID: HG1_170919A				SeqNo: 4647691		Prep Date: 9/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1953 0.016 0.1318 0.04666 113 75-125 0.1935 0.919 35

The following samples were analyzed in this batch:

1709471-01B	1709471-02B	1709471-03B
1709471-04B		

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107515** Instrument ID **ICPMS3** Method: **SW6020A**

Sample ID: MBLK-107515-107515				Units: mg/Kg			Analysis Date: 9/18/2017 05:09 PM				
Client ID:			Run ID: ICPMS3_170918A			SeqNo: 4644178		Prep Date: 9/18/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	U	0.25									
Barium	U	0.25									
Cadmium	U	0.10									
Chromium	0.03275	0.25								J	
Lead	0.0051	0.25								J	
Selenium	U	0.25									

MBLK		Sample ID: MBLK-107515-107515				Units: mg/Kg		Analysis Date: 9/19/2017 12:42 PM			
Client ID:		Run ID: ICPMS3_170919A				SeqNo: 4645524		Prep Date: 9/18/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Silver	U	0.25									

LCS		Sample ID: LCS-107515-107515				Units: mg/Kg		Analysis Date: 9/18/2017 05:10 PM		
Client ID:			Run ID: ICPMS3_170918A		SeqNo: 4644179		Prep Date: 9/18/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.445	0.25	5	0	88.9	80-120	0			
Barium	4.765	0.25	5	0	95.3	80-120	0			
Cadmium	4.448	0.10	5	0	89	80-120	0			
Chromium	4.511	0.25	5	0	90.2	80-120	0			
Lead	4.657	0.25	5	0	93.1	80-120	0			
Selenium	4.612	0.25	5	0	92.2	80-120	0			
Silver	4.759	0.25	5	0	95.2	80-120	0			

MS		Sample ID: 1709463-01AMS				Units: mg/Kg		Analysis Date: 9/18/2017 05:15 PM		
Client ID:		Run ID: ICPMS3_170918A			SeqNo: 4644182		Prep Date: 9/18/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	6.249	0.32	6.386	0.7872	85.5	75-125	0			
Barium	20.31	0.32	6.386	12.46	123	75-125	0			
Cadmium	5.37	0.13	6.386	0.01647	83.8	75-125	0			
Chromium	9.13	0.32	6.386	2.749	99.9	75-125	0			
Lead	7.642	0.32	6.386	1.709	92.9	75-125	0			
Selenium	5.859	0.32	6.386	0.2901	87.2	75-125	0			
Silver	5.664	0.32	6.386	0.006154	88.6	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107515** Instrument ID **ICPMS3** Method: **SW6020A**

MSD		Sample ID: 1709463-01AMSD				Units: mg/Kg		Analysis Date: 9/18/2017 05:16 PM		
Client ID:		Run ID: ICPMS3_170918A				SeqNo: 4644183		Prep Date: 9/18/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	6.498	0.32	6.427	0.7872	88.9	75-125	6.249	3.89	20	
Barium	20.6	0.32	6.427	12.46	127	75-125	20.31	1.41	20	S
Cadmium	5.489	0.13	6.427	0.01647	85.2	75-125	5.37	2.18	20	
Chromium	9.92	0.32	6.427	2.749	112	75-125	9.13	8.29	20	
Lead	7.916	0.32	6.427	1.709	96.6	75-125	7.642	3.51	20	
Selenium	6.175	0.32	6.427	0.2901	91.6	75-125	5.859	5.26	20	
Silver	5.916	0.32	6.427	0.006154	92	75-125	5.664	4.36	20	

The following samples were analyzed in this batch:

1709471-01B	1709471-02B	1709471-03B
1709471-04B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107240** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK		Sample ID: SBLKS1-107240-107240				Units: µg/Kg		Analysis Date: 9/12/2017 05:49 PM		
Client ID:		Run ID: SVMS6_170912A				SeqNo: 4637438		Prep Date: 9/12/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	U	42								
2-Methylnaphthalene	U	42								
Acenaphthene	U	42								
Acenaphthylene	U	42								
Anthracene	U	42								
Benzo(a)anthracene	U	42								
Benzo(a)pyrene	U	42								
Benzo(b)fluoranthene	U	42								
Benzo(g,h,i)perylene	U	42								
Benzo(k)fluoranthene	U	42								
Chrysene	U	42								
Dibenzo(a,h)anthracene	U	42								
Fluoranthene	U	42								
Fluorene	U	42								
Indeno(1,2,3-cd)pyrene	U	42								
Naphthalene	U	42								
Phenanthrene	U	42								
Pyrene	U	42								
<i>Surr: 2-Fluorobiphenyl</i>	<i>2998</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>89.9</i>	<i>20-140</i>	<i>0</i>			
<i>Surr: 4-Terphenyl-d14</i>	<i>4119</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>124</i>	<i>22-172</i>	<i>0</i>			
<i>Surr: Nitrobenzene-d5</i>	<i>3430</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>103</i>	<i>8-140</i>	<i>0</i>			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107240** Instrument ID **SVMS6** Method: **SW846 8270D**

LCS		Sample ID: SLCSS1-107240-107240				Units: µg/Kg		Analysis Date: 9/12/2017 06:03 PM		
Client ID:		Run ID: SVMS6_170912A				SeqNo: 4637439		Prep Date: 9/12/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	1324	42	1333	0	99.3	40-140	0			
2-Methylnaphthalene	1282	42	1333	0	96.2	40-140	0			
Acenaphthene	1258	42	1333	0	94.4	40-140	0			
Acenaphthylene	1263	42	1333	0	94.7	40-140	0			
Anthracene	1324	42	1333	0	99.3	40-140	0			
Benzo(a)anthracene	1329	42	1333	0	99.7	40-140	0			
Benzo(a)pyrene	1378	42	1333	0	103	40-140	0			
Benzo(b)fluoranthene	1320	42	1333	0	99	40-140	0			
Benzo(g,h,i)perylene	1148	42	1333	0	86.1	40-140	0			
Benzo(k)fluoranthene	1400	42	1333	0	105	40-140	0			
Chrysene	1242	42	1333	0	93.2	40-140	0			
Dibenzo(a,h)anthracene	1165	42	1333	0	87.4	40-140	0			
Fluoranthene	1121	42	1333	0	84.1	40-140	0			
Fluorene	1331	42	1333	0	99.8	40-140	0			
Indeno(1,2,3-cd)pyrene	1211	42	1333	0	90.9	40-140	0			
Naphthalene	1258	42	1333	0	94.4	40-140	0			
Phenanthrene	1280	42	1333	0	96	40-140	0			
Pyrene	1197	42	1333	0	89.8	40-140	0			
<i>Surr: 2-Fluorobiphenyl</i>	<i>2984</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>89.5</i>	<i>20-140</i>	<i>0</i>			
<i>Surr: 4-Terphenyl-d14</i>	<i>3146</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>94.4</i>	<i>22-172</i>	<i>0</i>			
<i>Surr: Nitrobenzene-d5</i>	<i>3811</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>114</i>	<i>8-140</i>	<i>0</i>			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107240** Instrument ID **SVMS6** Method: **SW846 8270D**

MS				Sample ID: 1709497-05B MS			Units: µg/Kg		Analysis Date: 9/12/2017 06:17 PM	
Client ID:				Run ID: SVMS6_170912A			SeqNo: 4637440		Prep Date: 9/12/2017	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	1350	41	1321	0	102	40-140	0			
2-Methylnaphthalene	1326	41	1321	0	100	40-140	0			
Acenaphthene	1243	41	1321	0	94.1	40-140	0			
Acenaphthylene	1268	41	1321	0	96	40-140	0			
Anthracene	1391	41	1321	50.97	101	40-140	0			
Benzo(a)anthracene	1588	41	1321	270.3	99.8	40-140	0			
Benzo(a)pyrene	1517	41	1321	205.1	99.4	40-140	0			
Benzo(b)fluoranthene	1565	41	1321	264.6	98.5	40-140	0			
Benzo(g,h,i)perylene	1411	41	1321	139	96.3	40-140	0			
Benzo(k)fluoranthene	1523	41	1321	179.1	102	40-140	0			
Chrysene	1488	41	1321	201.4	97.4	40-140	0			
Dibenzo(a,h)anthracene	1502	41	1321	70.58	108	40-140	0			
Fluoranthene	1584	41	1321	498.1	82.2	40-140	0			
Fluorene	1318	41	1321	0	99.8	40-140	0			
Indeno(1,2,3-cd)pyrene	1543	41	1321	139.9	106	40-140	0			
Naphthalene	1210	41	1321	0	91.6	40-140	0			
Phenanthrene	1488	41	1321	188.3	98.4	40-140	0			
Pyrene	1577	41	1321	462.7	84.4	40-140	0			
Surr: 2-Fluorobiphenyl	3066	0	3303	0	92.8	20-140	0			
Surr: 4-Terphenyl-d14	3329	0	3303	0	101	22-172	0			
Surr: Nitrobenzene-d5	3829	0	3303	0	116	8-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107240** Instrument ID **SVMS6** Method: **SW846 8270D**

MSD				Sample ID: 1709497-05B MSD			Units: µg/Kg		Analysis Date: 9/12/2017 06:31 PM	
Client ID:				Run ID: SVMS6_170912A			SeqNo: 4637441		Prep Date: 9/12/2017	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	1172	41	1326	0	88.4	40-140	1350	14.1	30	
2-Methylnaphthalene	1134	41	1326	0	85.5	40-140	1326	15.6	30	
Acenaphthene	1127	41	1326	0	85	40-140	1243	9.81	30	
Acenaphthylene	1124	41	1326	0	84.8	40-140	1268	12	30	
Anthracene	1194	41	1326	50.97	86.3	40-140	1391	15.2	30	
Benzo(a)anthracene	1337	41	1326	270.3	80.4	40-140	1588	17.2	30	
Benzo(a)pyrene	1327	41	1326	205.1	84.6	40-140	1517	13.4	30	
Benzo(b)fluoranthene	1387	41	1326	264.6	84.7	40-140	1565	12.1	30	
Benzo(g,h,i)perylene	1218	41	1326	139	81.4	40-140	1411	14.7	30	
Benzo(k)fluoranthene	1258	41	1326	179.1	81.4	40-140	1523	19.1	30	
Chrysene	1255	41	1326	201.4	79.5	40-140	1488	17	30	
Dibenzo(a,h)anthracene	1265	41	1326	70.58	90.1	40-140	1502	17.1	30	
Fluoranthene	1301	41	1326	498.1	60.5	40-140	1584	19.6	30	
Fluorene	1171	41	1326	0	88.3	40-140	1318	11.9	30	
Indeno(1,2,3-cd)pyrene	1325	41	1326	139.9	89.4	40-140	1543	15.2	30	
Naphthalene	1101	41	1326	0	83	40-140	1210	9.4	30	
Phenanthrene	1265	41	1326	188.3	81.2	40-140	1488	16.1	30	
Pyrene	1306	41	1326	462.7	63.6	40-140	1577	18.9	30	
Surr: 2-Fluorobiphenyl	2686	0	3315	0	81	20-140	3066	13.2	0	
Surr: 4-Terphenyl-d14	2965	0	3315	0	89.4	22-172	3329	11.6	0	
Surr: Nitrobenzene-d5	3222	0	3315	0	97.2	8-140	3829	17.2	0	

The following samples were analyzed in this batch:

1709471-01B	1709471-02B	1709471-03B
1709471-04B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107224** Instrument ID **VMS7** Method: **SW8260B**

MBLK		Sample ID: MBLK-107224-107224				Units: µg/Kg-dry		Analysis Date: 9/12/2017 12:56 PM		
Client ID:		Run ID: VMS7_170912A				SeqNo: 4635958		Prep Date: 9/11/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U	30								
1,1,2,2-Tetrachloroethane	U	30								
1,1,2-Trichloroethane	U	30								
1,1-Dichloroethane	U	30								
1,1-Dichloroethene	U	30								
1,2,3-Trichlorobenzene	U	30								
1,2,4-Trichlorobenzene	U	30								
1,2,4-Trimethylbenzene	U	30								
1,2-Dibromo-3-chloropropane	U	100								
1,2-Dibromoethane	U	30								
1,2-Dichlorobenzene	U	30								
1,2-Dichloroethane	U	30								
1,2-Dichloropropane	U	30								
1,3,5-Trimethylbenzene	U	30								
1,3-Dichlorobenzene	U	30								
1,4-Dichlorobenzene	U	30								
2-Butanone	U	200								
2-Hexanone	U	30								
4-Methyl-2-pentanone	U	30								
Benzene	U	30								
Bromochloromethane	U	30								
Bromodichloromethane	U	30								
Bromoform	U	30								
Bromomethane	U	100								
Carbon disulfide	U	30								
Carbon tetrachloride	U	30								
Chlorobenzene	U	30								
Chloroethane	U	100								
Chloroform	U	30								
Chloromethane	U	100								
cis-1,2-Dichloroethene	U	30								
cis-1,3-Dichloropropene	U	30								
Cyclohexane	U	30								
Dibromochloromethane	U	30								
Dichlorodifluoromethane	U	30								
Ethylbenzene	U	30								
Isopropylbenzene	U	30								
m,p-Xylene	U	60								
Methyl tert-butyl ether	U	30								
Methylcyclohexane	U	30								
Methylene chloride	U	30								
Naphthalene	U	100								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: 107224	Instrument ID VMS7	Method: SW8260B
o-Xylene	U	30
Styrene	U	30
Tetrachloroethene	U	30
Toluene	U	30
trans-1,2-Dichloroethene	U	30
trans-1,3-Dichloropropene	U	30
Trichloroethene	U	30
Trichlorofluoromethane	U	30
Vinyl chloride	U	30
Xylenes, Total	U	90
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>968</i>	<i>0 1000 0 96.8 70-130 0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>958.5</i>	<i>0 1000 0 95.8 70-130 0</i>
<i>Surr: Dibromofluoromethane</i>	<i>986</i>	<i>0 1000 0 98.6 70-130 0</i>
<i>Surr: Toluene-d8</i>	<i>984</i>	<i>0 1000 0 98.4 70-130 0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107224** Instrument ID **VMS7** Method: **SW8260B**

LCS				Sample ID: LCS-107224-107224			Units: µg/Kg-dry		Analysis Date: 9/12/2017 11:52 AM	
Client ID:				Run ID: VMS7_170912A			SeqNo: 4635957		Prep Date: 9/11/2017	
							DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1050	30	1000	0	105	70-135	0			
1,1,2,2-Tetrachloroethane	1003	30	1000	0	100	55-130	0			
1,1,2-Trichloroethane	944.5	30	1000	0	94.4	60-125	0			
1,1-Dichloroethane	970.5	30	1000	0	97	75-125	0			
1,1-Dichloroethene	1078	30	1000	0	108	65-135	0			
1,2,3-Trichlorobenzene	969	30	1000	0	96.9	60-135	0			
1,2,4-Trichlorobenzene	942.5	30	1000	0	94.2	65-130	0			
1,2,4-Trimethylbenzene	857.5	30	1000	0	85.8	65-135	0			
1,2-Dibromo-3-chloropropane	1111	100	1000	0	111	40-135	0			
1,2-Dibromoethane	1084	30	1000	0	108	80-195	0			
1,2-Dichlorobenzene	889.5	30	1000	0	89	75-120	0			
1,2-Dichloroethane	898	30	1000	0	89.8	70-135	0			
1,2-Dichloropropane	904.5	30	1000	0	90.4	70-120	0			
1,3,5-Trimethylbenzene	861.5	30	1000	0	86.2	65-135	0			
1,3-Dichlorobenzene	917	30	1000	0	91.7	70-125	0			
1,4-Dichlorobenzene	904	30	1000	0	90.4	70-125	0			
2-Butanone	966.5	200	1000	0	96.6	30-160	0			
2-Hexanone	896.5	30	1000	0	89.6	45-145	0			
4-Methyl-2-pentanone	1205	30	1000	0	120	74-176	0			
Benzene	955	30	1000	0	95.5	75-125	0			
Bromochloromethane	926	30	1000	0	92.6	74-134	0			
Bromodichloromethane	952	30	1000	0	95.2	70-130	0			
Bromoform	935	30	1000	0	93.5	55-135	0			
Bromomethane	968	100	1000	0	96.8	50-170	0			
Carbon disulfide	1092	30	1000	0	109	45-160	0			
Carbon tetrachloride	889	30	1000	0	88.9	65-135	0			
Chlorobenzene	929	30	1000	0	92.9	75-125	0			
Chloroethane	836.5	100	1000	0	83.6	40-155	0			
Chloroform	942.5	30	1000	0	94.2	70-125	0			
Chloromethane	661.5	100	1000	0	66.2	50-144	0			
cis-1,2-Dichloroethene	935	30	1000	0	93.5	65-125	0			
cis-1,3-Dichloropropene	900	30	1000	0	90	70-125	0			
Dibromochloromethane	780	30	1000	0	78	65-135	0			
Dichlorodifluoromethane	713.5	30	1000	0	71.4	35-135	0			
Ethylbenzene	900.5	30	1000	0	90	75-125	0			
Isopropylbenzene	952	30	1000	0	95.2	75-130	0			
m,p-Xylene	1810	60	2000	0	90.5	80-125	0			
Methyl tert-butyl ether	884	30	1000	0	88.4	75-125	0			
Methylene chloride	972	30	1000	0	97.2	55-145	0			
Naphthalene	972	100	1000	0	97.2	40-140	0			
o-Xylene	937.5	30	1000	0	93.8	75-125	0			
Styrene	988	30	1000	0	98.8	80-138	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: 107224	Instrument ID VMS7		Method: SW8260B				
Tetrachloroethene	1031	30	1000	0	103	67-167	0
Toluene	917	30	1000	0	91.7	70-125	0
trans-1,2-Dichloroethene	944.5	30	1000	0	94.4	65-135	0
trans-1,3-Dichloropropene	846.5	30	1000	0	84.6	59-129	0
Trichloroethene	1016	30	1000	0	102	75-125	0
Trichlorofluoromethane	859	30	1000	0	85.9	25-185	0
Vinyl chloride	783	30	1000	0	78.3	60-125	0
Xylenes, Total	2748	90	3000	0	91.6	75-125	0
<i>Surr: 1,2-Dichloroethane-d4</i>	969.5	0	1000	0	97	70-130	0
<i>Surr: 4-Bromofluorobenzene</i>	1018	0	1000	0	102	70-130	0
<i>Surr: Dibromofluoromethane</i>	1042	0	1000	0	104	70-130	0
<i>Surr: Toluene-d8</i>	959	0	1000	0	95.9	70-130	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107224** Instrument ID **VMS7** Method: **SW8260B**

MS				Sample ID: 1709497-05A MS			Units: µg/Kg-dry		Analysis Date: 9/13/2017 06:44 PM	
Client ID:				Run ID: VMS7_170913A			SeqNo: 4637939		Prep Date: 9/11/2017	
							DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1096	33	1086	0	101	70-135	0			
1,1,2,2-Tetrachloroethane	1057	33	1086	0	97.4	55-130	0			
1,1,2-Trichloroethane	1074	33	1086	0	99	60-125	0			
1,1-Dichloroethane	1033	33	1086	0	95.2	75-125	0			
1,1-Dichloroethene	1224	33	1086	0	113	65-135	0			
1,2,3-Trichlorobenzene	1249	33	1086	0	115	60-135	0			
1,2,4-Trichlorobenzene	1206	33	1086	0	111	65-130	0			
1,2,4-Trimethylbenzene	969.4	33	1086	0	89.3	65-135	0			
1,2-Dibromo-3-chloropropane	1102	110	1086	0	102	40-135	0			
1,2-Dibromoethane	1227	33	1086	0	113	80-195	0			
1,2-Dichlorobenzene	1040	33	1086	0	95.8	75-120	0			
1,2-Dichloroethane	1041	33	1086	0	95.9	70-135	0			
1,2-Dichloropropane	1024	33	1086	0	94.4	70-120	0			
1,3,5-Trimethylbenzene	1029	33	1086	0	94.8	65-135	0			
1,3-Dichlorobenzene	1054	33	1086	0	97.1	70-125	0			
1,4-Dichlorobenzene	1025	33	1086	0	94.4	70-125	0			
2-Butanone	1858	220	1086	0	171	30-160	0			S
2-Hexanone	1335	33	1086	0	123	45-145	0			
4-Methyl-2-pentanone	1280	33	1086	0	118	74-176	0			
Benzene	1066	33	1086	0	98.2	75-125	0			
Bromochloromethane	936.2	33	1086	0	86.2	74-134	0			
Bromodichloromethane	954.2	33	1086	0	87.9	70-130	0			
Bromoform	905.3	33	1086	0	83.4	55-135	0			
Bromomethane	214.9	110	1086	0	19.8	50-170	0			S
Carbon disulfide	1103	33	1086	0	102	45-160	0			
Carbon tetrachloride	889.6	33	1086	0	82	65-135	0			
Chlorobenzene	1044	33	1086	0	96.2	75-125	0			
Chloroethane	697.4	110	1086	0	64.2	40-155	0			
Chloroform	1014	33	1086	0	93.4	70-125	0			
Chloromethane	753.9	110	1086	0	69.4	50-144	0			
cis-1,2-Dichloroethene	991.1	33	1086	0	91.3	65-125	0			
cis-1,3-Dichloropropene	922.7	33	1086	0	85	70-125	0			
Dibromochloromethane	785.9	33	1086	0	72.4	65-135	0			
Dichlorodifluoromethane	712.1	33	1086	0	65.6	35-135	0			
Ethylbenzene	1010	33	1086	0	93	75-125	0			
Isopropylbenzene	1057	33	1086	0	97.4	75-130	0			
m,p-Xylene	2059	65	2171	0	94.8	80-125	0			
Methyl tert-butyl ether	1052	33	1086	0	96.9	75-125	0			
Methylene chloride	1084	33	1086	0	99.9	55-145	0			
Naphthalene	1158	110	1086	0	107	40-140	0			
o-Xylene	1049	33	1086	0	96.6	75-125	0			
Styrene	1097	33	1086	0	101	80-138	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: 107224	Instrument ID VMS7		Method: SW8260B					
Tetrachloroethene	1959	33	1086	0	180	67-167	0	S
Toluene	1042	33	1086	0	96	70-125	0	
trans-1,2-Dichloroethene	1099	33	1086	0	101	65-135	0	
trans-1,3-Dichloropropene	867.9	33	1086	0	80	59-129	0	
Trichloroethene	1133	33	1086	0	104	75-125	0	
Trichlorofluoromethane	867.9	33	1086	0	80	25-185	0	
Vinyl chloride	828.2	33	1086	0	76.3	60-125	0	
Xylenes, Total	3108	98	3257	0	95.4	75-125	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1028</i>	<i>0</i>	<i>1086</i>	<i>0</i>	<i>94.7</i>	<i>70-130</i>	<i>0</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>1049</i>	<i>0</i>	<i>1086</i>	<i>0</i>	<i>96.6</i>	<i>70-130</i>	<i>0</i>	
<i>Surr: Dibromofluoromethane</i>	<i>1091</i>	<i>0</i>	<i>1086</i>	<i>0</i>	<i>101</i>	<i>70-130</i>	<i>0</i>	
<i>Surr: Toluene-d8</i>	<i>1039</i>	<i>0</i>	<i>1086</i>	<i>0</i>	<i>95.8</i>	<i>70-130</i>	<i>0</i>	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107224** Instrument ID **VMS7** Method: **SW8260B**

MSD				Sample ID: 1709497-05A MSD			Units: µg/Kg-dry		Analysis Date: 9/13/2017 07:05 PM		
Client ID:			Run ID: VMS7_170913A			SeqNo: 4637940		Prep Date: 9/11/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
1,1,1-Trichloroethane	1124	33	1086		0	104	70-135	1096	2.49	30	
1,1,2,2-Tetrachloroethane	1006	33	1086		0	92.6	55-130	1057	4.95	30	
1,1,2-Trichloroethane	1041	33	1086		0	95.9	60-125	1074	3.13	30	
1,1-Dichloroethane	1036	33	1086		0	95.4	75-125	1033	0.262	30	
1,1-Dichloroethene	1293	33	1086		0	119	65-135	1224	5.52	30	
1,2,3-Trichlorobenzene	1218	33	1086		0	112	60-135	1249	2.46	30	
1,2,4-Trichlorobenzene	1208	33	1086		0	111	65-130	1206	0.135	30	
1,2,4-Trimethylbenzene	1004	33	1086		0	92.5	65-135	969.4	3.52	30	
1,2-Dibromo-3-chloropropane	1050	110	1086		0	96.8	40-135	1102	4.84	30	
1,2-Dibromoethane	1215	33	1086		0	112	80-195	1227	0.978	30	
1,2-Dichlorobenzene	1031	33	1086		0	95	75-120	1040	0.839	30	
1,2-Dichloroethane	1017	33	1086		0	93.7	70-135	1041	2.32	30	
1,2-Dichloropropane	1029	33	1086		0	94.8	70-120	1024	0.423	30	
1,3,5-Trimethylbenzene	1045	33	1086		0	96.3	65-135	1029	1.62	30	
1,3-Dichlorobenzene	1031	33	1086		0	95	70-125	1054	2.19	30	
1,4-Dichlorobenzene	1019	33	1086		0	93.9	70-125	1025	0.531	30	
2-Butanone	1763	220	1086		0	162	30-160	1858	5.25	30	S
2-Hexanone	1307	33	1086		0	120	45-145	1335	2.09	30	
4-Methyl-2-pentanone	1241	33	1086		0	114	74-176	1280	3.1	30	
Benzene	1088	33	1086		0	100	75-125	1066	2.02	30	
Bromochloromethane	917.8	33	1086		0	84.6	74-134	936.2	1.99	30	
Bromodichloromethane	974.8	33	1086		0	89.8	70-130	954.2	2.14	30	
Bromoform	850.5	33	1086		0	78.4	55-135	905.3	6.24	30	
Bromomethane	157.4	110	1086		0	14.5	50-170	214.9	30.9	30	SR
Carbon disulfide	1122	33	1086		0	103	45-160	1103	1.76	30	
Carbon tetrachloride	920.5	33	1086		0	84.8	65-135	889.6	3.42	30	
Chlorobenzene	1050	33	1086		0	96.7	75-125	1044	0.57	30	
Chloroethane	705	110	1086		0	65	40-155	697.4	1.08	30	
Chloroform	1039	33	1086		0	95.8	70-125	1014	2.48	30	
Chloromethane	769.1	110	1086		0	70.8	50-144	753.9	2	30	
cis-1,2-Dichloroethene	1011	33	1086		0	93.2	65-125	991.1	2.01	30	
cis-1,3-Dichloropropene	942.8	33	1086		0	86.8	70-125	922.7	2.15	30	
Dibromochloromethane	787.5	33	1086		0	72.6	65-135	785.9	0.207	30	
Dichlorodifluoromethane	700.2	33	1086		0	64.5	35-135	712.1	1.69	30	
Ethylbenzene	1044	33	1086		0	96.2	75-125	1010	3.33	30	
Isopropylbenzene	1096	33	1086		0	101	75-130	1057	3.63	30	
m,p-Xylene	2113	65	2171		0	97.4	80-125	2059	2.63	30	
Methyl tert-butyl ether	1042	33	1086		0	96	75-125	1052	0.933	30	
Methylene chloride	1061	33	1086		0	97.7	55-145	1084	2.23	30	
Naphthalene	1139	110	1086		0	105	40-140	1158	1.65	30	
o-Xylene	1050	33	1086		0	96.7	75-125	1049	0.0517	30	
Styrene	1113	33	1086		0	103	80-138	1097	1.42	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: 107224	Instrument ID VMS7		Method: SW8260B							
Tetrachloroethene	2023	33	1086	0	186	67-167	1959	3.19	30	S
Toluene	1033	33	1086	0	95.2	70-125	1042	0.785	30	
trans-1,2-Dichloroethene	1165	33	1086	0	107	65-135	1099	5.8	30	
trans-1,3-Dichloropropene	886.9	33	1086	0	81.7	59-129	867.9	2.17	30	
Trichloroethene	1184	33	1086	0	109	75-125	1133	4.45	30	
Trichlorofluoromethane	842.9	33	1086	0	77.6	25-185	867.9	2.92	30	
Vinyl chloride	842.4	33	1086	0	77.6	60-125	828.2	1.69	30	
Xylenes, Total	3163	98	3257	0	97.1	75-125	3108	1.77	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1024</i>	<i>0</i>	<i>1086</i>	<i>0</i>	<i>94.4</i>	<i>70-130</i>	<i>1028</i>	<i>0.37</i>	<i>30</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>1051</i>	<i>0</i>	<i>1086</i>	<i>0</i>	<i>96.8</i>	<i>70-130</i>	<i>1049</i>	<i>0.207</i>	<i>30</i>	
<i>Surr: Dibromofluoromethane</i>	<i>1134</i>	<i>0</i>	<i>1086</i>	<i>0</i>	<i>104</i>	<i>70-130</i>	<i>1091</i>	<i>3.85</i>	<i>30</i>	
<i>Surr: Toluene-d8</i>	<i>1052</i>	<i>0</i>	<i>1086</i>	<i>0</i>	<i>97</i>	<i>70-130</i>	<i>1039</i>	<i>1.25</i>	<i>30</i>	

The following samples were analyzed in this batch:

1709471-01A	1709471-02A	1709471-03A
1709471-04A	1709471-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709471
Project: 21-41365B

QC BATCH REPORT

Batch ID: **R220203** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R220203					Units: % of sample		Analysis Date: 9/17/2017 05:41 PM		
Client ID:		Run ID: MOIST_170917A				SeqNo: 4642591		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture U 0.050

LCS		Sample ID: LCS-R220203					Units: % of sample		Analysis Date: 9/17/2017 05:41 PM		
Client ID:			Run ID: MOIST_170917A			SeqNo: 4642590		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP				Sample ID: 1709471-03B DUP				Units: % of sample			Analysis Date: 9/17/2017 05:41 PM			
Client ID: RF-B-17 (3-4')				Run ID: MOIST_170917A				SeqNo: 4642558			Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture 12.44 0.050 0 0 0 0-0 13.54 8.47 5 R

DUP				Sample ID: 1709471-04B DUP				Units: % of sample			Analysis Date: 9/17/2017 05:41 PM			
Client ID: RF-B-17 (12-13')				Run ID: MOIST_170917A				SeqNo: 4642560			Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture 12.9 0.050 0 0 0 0-0 11.44 12 5 R

The following samples were analyzed in this batch:

1709471-01B	1709471-02B	1709471-03B
1709471-04B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Environmental

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Chain of Custody Form

Page 1 of 1

COC ID:

38980

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Spring City, PA
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Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Customer Information			Project Information				Parameter/Method Request for Analysis												
Purchase Order		Project Name					A VOCs												
Work Order		Project Number	21-4/365B				B PAHs												
Company Name	Ramboll Environ US Corporation	Bill To Company	Ramboll Environ US Corporation				C RCRA 8 Metals												
Send Report To	Donna Voik	Invoice Attn	Accounts Payable				D Lead												
Address	175 N Corporate Drive Suite 160	Address	175 N Corporate Drive Suite 160				E												
City/State/Zip	Brookfield, WI 53045	City/State/Zip	Brookfield, WI 53045				F												
Phone	(262) 901-0099	Phone	(262) 901-0099				G												
Fax	(262) 901-0079	Fax	(262) 901-0079				H												
e-Mail Address	dvoik@ramboll.com	e-Mail Address	dvoik@ramboll.com				I												
							J												
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	RF-B-16 (5-6')	9-8-17	1130	Soil	MeOH	4	X	X	X										
2	RF-B-16 (10-11')	9-8-17	1150	Soil	MeOH	4	X	X	X										
3	RF-B-17 (3-4')	9-8-17	1315	Soil	MeOH	4	X	X	X										
4	RF-B-17 (12-13')	9-8-17	1355	Soil	MeOH	4	X	X	X										
5	TRIP BLANK				MeOH	1	X												
6	TEMP BLANK					1													
7																			
8																			
9																			
10																			
Sampler(s) Please Print & Sign		Shipment Method		Turnaround Time in Business Days (BD)				Results Due Date:											
Jonathan Fudua		FedEx ON		<input checked="" type="checkbox"/> 10 BD <input type="checkbox"/> 5 BD <input type="checkbox"/> 3 BD <input type="checkbox"/> 2 BD <input type="checkbox"/> 1 BD															
Relinquished by:		Date:	Time:	Received by:		Notes:													
FED EX		9-8-17	1530	FED EX															
Relinquished by:		Date:	Time:	Received by (Laboratory):															
NJE		9/9/17	1000	[Signature]															
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):															
NJE		9/11/17	0930	[Signature]															
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035																			

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Sample Receipt Checklist

Client Name: **ENVIRONINT - WI**

Date/Time Received: **09-Sep-17 10:00**

Work Order: **1709471**

Received by: **DS**

Checklist completed by Nicole Fredericks
eSignature

11-Sep-17
Date

Reviewed by: Chad Whelton
eSignature

12-Sep-17
Date

Matrices: **soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>5.4/5.4</u>		<u>sr2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>9/11/2017 9:28:45 AM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



07-Dec-2017

Donna Volk
Ramboll Environ US Corporation
175 N Corporate Drive
Suite 160
Brookfield, WI 53045

Re: **Site ID: 12.17 (21-41365B)**

Work Order: **17101842**

Dear Donna,

ALS Environmental received 1 sample on 27-Oct-2017 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 16.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

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RIGHT SOLUTIONS RIGHT PARTNER

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Work Order: 17101842

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
17101842-01	WS-B-1	Groundwater		10/26/2017 13:15	10/27/2017 09:30	<input type="checkbox"/>

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Work Order: 17101842

Case Narrative

Samples for the above noted Work Order were received on 10/27/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, sample condition, preservation, and temperature compliance.

In order to ensure compliance with NR 149 criteria, please note the following report format:

- (1) The Limit of Detection (LOD) is reported as the MDL (Method Detection Limit)
- (2) The Limit of Quantitation (LOQ) is reported as the PQL (Practical Quantitation Limit)
- (3) All reported concentrations, including those for the LOD and LOQ, are adjusted for any required dilutions
- (4) All reported concentrations, including those for the LOD and LOQ, are adjusted for moisture content when samples are reported on a dry weight basis.

Samples were analyzed according to the analytical methodology previously documented in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Detail as to the associated samples can be found at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, acronyms, and units utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
WorkOrder: 17101842

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
µg/L	Micrograms per Liter

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-1
Collection Date: 10/26/2017 01:15 PM

Work Order: 17101842
Lab ID: 17101842-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B			Analyst: BG	
1,1,1-Trichloroethane	U		0.36	1.2	µg/L	1	11/6/2017 06:26
1,1,2,2-Tetrachloroethane	U		0.19	0.62	µg/L	1	11/6/2017 06:26
1,1,2-Trichloroethane	U		0.40	1.3	µg/L	1	11/6/2017 06:26
1,1-Dichloroethane	U		0.31	1.0	µg/L	1	11/6/2017 06:26
1,1-Dichloroethene	U		0.28	0.92	µg/L	1	11/6/2017 06:26
1,2,3-Trichlorobenzene	U		0.17	0.55	µg/L	1	11/6/2017 06:26
1,2,4-Trichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 06:26
1,2,4-Trimethylbenzene	U		0.37	1.2	µg/L	1	11/6/2017 06:26
1,2-Dibromo-3-chloropropane	U		0.97	3.2	µg/L	1	11/6/2017 06:26
1,2-Dibromoethane	U		0.98	3.3	µg/L	1	11/6/2017 06:26
1,2-Dichlorobenzene	U		0.22	0.73	µg/L	1	11/6/2017 06:26
1,2-Dichloroethane	U		0.17	0.55	µg/L	1	11/6/2017 06:26
1,2-Dichloropropane	U		0.25	0.83	µg/L	1	11/6/2017 06:26
1,3,5-Trimethylbenzene	U		0.29	0.95	µg/L	1	11/6/2017 06:26
1,3-Dichlorobenzene	U		0.29	0.96	µg/L	1	11/6/2017 06:26
1,4-Dichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 06:26
2-Butanone	U		0.58	2.0	µg/L	1	11/6/2017 06:26
2-Hexanone	U		0.13	0.42	µg/L	1	11/6/2017 06:26
4-Methyl-2-pentanone	U		0.11	0.40	µg/L	1	11/6/2017 06:26
Benzene	U		0.30	1.0	µg/L	1	11/6/2017 06:26
Bromochloromethane	U		0.20	0.66	µg/L	1	11/6/2017 06:26
Bromodichloromethane	U		0.23	0.78	µg/L	1	11/6/2017 06:26
Bromoform	U		0.77	2.6	µg/L	1	11/6/2017 06:26
Bromomethane	U		0.38	1.3	µg/L	1	11/6/2017 06:26
Carbon disulfide	U		0.23	0.76	µg/L	1	11/6/2017 06:26
Carbon tetrachloride	U		0.31	1.0	µg/L	1	11/6/2017 06:26
Chlorobenzene	U		0.27	0.90	µg/L	1	11/6/2017 06:26
Chloroethane	U		0.29	0.97	µg/L	1	11/6/2017 06:26
Chloroform	U		0.26	0.86	µg/L	1	11/6/2017 06:26
Chloromethane	U		0.17	0.57	µg/L	1	11/6/2017 06:26
cis-1,2-Dichloroethene	U		0.25	0.85	µg/L	1	11/6/2017 06:26
cis-1,3-Dichloropropene	U		0.39	1.3	µg/L	1	11/6/2017 06:26
Cyclohexane	U		0.22	0.73	µg/L	1	11/6/2017 06:26
Dibromochloromethane	U		0.38	1.2	µg/L	1	11/6/2017 06:26
Dichlorodifluoromethane	U		0.13	0.44	µg/L	1	11/6/2017 06:26
Ethylbenzene	U		0.40	1.3	µg/L	1	11/6/2017 06:26
Isopropylbenzene	U		0.31	1.0	µg/L	1	11/6/2017 06:26
m,p-Xylene	U		0.98	3.3	µg/L	1	11/6/2017 06:26

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-1
Collection Date: 10/26/2017 01:15 PM

Work Order: 17101842
Lab ID: 17101842-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		0.12	0.40	µg/L	1	11/6/2017 06:26
Methylcyclohexane	U		0.27	0.90	µg/L	1	11/6/2017 06:26
Methylene chloride	U		0.56	1.8	µg/L	1	11/6/2017 06:26
Naphthalene	U		0.18	0.59	µg/L	1	11/6/2017 06:26
o-Xylene	U		0.35	1.2	µg/L	1	11/6/2017 06:26
Styrene	U		0.24	0.79	µg/L	1	11/6/2017 06:26
Tetrachloroethene	U		0.27	0.91	µg/L	1	11/6/2017 06:26
Toluene	U		0.37	1.2	µg/L	1	11/6/2017 06:26
trans-1,2-Dichloroethene	U		0.28	0.93	µg/L	1	11/6/2017 06:26
trans-1,3-Dichloropropene	U		0.82	2.7	µg/L	1	11/6/2017 06:26
Trichloroethene	U		0.30	0.99	µg/L	1	11/6/2017 06:26
Trichlorofluoromethane	U		0.20	0.66	µg/L	1	11/6/2017 06:26
Vinyl chloride	U		0.20	0.68	µg/L	1	11/6/2017 06:26
Xylenes, Total	U		1.3	4.4	µg/L	1	11/6/2017 06:26
Surr: 1,2-Dichloroethane-d4	107			75-120	%REC	1	11/6/2017 06:26
Surr: 4-Bromofluorobenzene	98.8			80-110	%REC	1	11/6/2017 06:26
Surr: Dibromofluoromethane	100			85-115	%REC	1	11/6/2017 06:26
Surr: Toluene-d8	98.2			85-110	%REC	1	11/6/2017 06:26

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 07-Dec-17

Client: Ramboll Environ US Corporation
Work Order: 17101842
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **R223840b** Instrument ID **VMS5** Method: **SW8260B**

MBLK		Sample ID: VBLKW1-171105-R223840b				Units: µg/L		Analysis Date: 11/6/2017 01:19 AM		
Client ID:		Run ID: VMS5_171105A				SeqNo: 4742501		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U	1.2								
1,1,2,2-Tetrachloroethane	U	0.62								
1,1,2-Trichloroethane	U	1.3								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	0.92								
1,2,3-Trichlorobenzene	U	0.55								
1,2,4-Trichlorobenzene	U	0.71								
1,2,4-Trimethylbenzene	U	1.2								
1,2-Dibromo-3-chloropropane	U	3.2								
1,2-Dibromoethane	U	3.3								
1,2-Dichlorobenzene	U	0.73								
1,2-Dichloroethane	U	0.55								
1,2-Dichloropropane	U	0.83								
1,3,5-Trimethylbenzene	U	0.95								
1,3-Dichlorobenzene	U	0.96								
1,4-Dichlorobenzene	U	0.71								
2-Butanone	U	2.0								
2-Hexanone	U	0.42								
4-Methyl-2-pentanone	U	0.40								
Benzene	U	1.0								
Bromochloromethane	U	0.66								
Bromodichloromethane	U	0.78								
Bromoform	U	2.6								
Bromomethane	U	1.3								
Carbon disulfide	U	0.76								
Carbon tetrachloride	U	1.0								
Chlorobenzene	U	0.90								
Chloroethane	U	0.97								
Chloroform	U	0.86								
Chloromethane	U	0.57								
cis-1,2-Dichloroethene	U	0.85								
cis-1,3-Dichloropropene	U	1.3								
Cyclohexane	U	0.73								
Dibromochloromethane	U	1.2								
Dichlorodifluoromethane	U	0.44								
Ethylbenzene	U	1.3								
Isopropylbenzene	U	1.0								
m,p-Xylene	U	3.3								
Methyl tert-butyl ether	U	0.40								
Methylcyclohexane	U	0.90								
Methylene chloride	U	1.8								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101842
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: R223840b	Instrument ID VMS5	Method: SW8260B					
Naphthalene	0.3	0.59	J				
o-Xylene	U	1.2					
Styrene	U	0.79					
Tetrachloroethene	U	0.91					
Toluene	U	1.2					
trans-1,2-Dichloroethene	U	0.93					
trans-1,3-Dichloropropene	U	2.7					
Trichloroethene	U	0.99					
Trichlorofluoromethane	U	0.66					
Vinyl chloride	U	0.68					
Xylenes, Total	U	4.4					
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>20.63</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>103</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>19.64</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>98.2</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>19.36</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>96.8</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>19.89</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>99.4</i>	<i>85-110</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101842
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **R223840b** Instrument ID **VMS5** Method: **SW8260B**

LCS		Sample ID: VLCSW2-171105-R223840b				Units: µg/L		Analysis Date: 11/6/2017 12:27 PM		
Client ID:		Run ID: VMS5_171105A				SeqNo: 4742518		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	20.99	1.2	20	0	105	75-130	0			
1,1,2,2-Tetrachloroethane	20.98	0.62	20	0	105	75-130	0			
1,1,2-Trichloroethane	19.22	1.3	20	0	96.1	75-125	0			
1,1-Dichloroethane	19.21	1.0	20	0	96	75-133	0			
1,1-Dichloroethene	22.53	0.92	20	0	113	70-145	0			
1,2,3-Trichlorobenzene	18.28	0.55	20	0	91.4	70-140	0			
1,2,4-Trichlorobenzene	18.17	0.71	20	0	90.8	70-135	0			
1,2,4-Trimethylbenzene	18.59	1.2	20	0	93	75-130	0			
1,2-Dibromo-3-chloropropane	18.6	3.2	20	0	93	60-130	0			
1,2-Dibromoethane	19.63	3.3	20	0	98.2	90-195	0			
1,2-Dichlorobenzene	17.91	0.73	20	0	89.6	70-130	0			
1,2-Dichloroethane	19.73	0.55	20	0	98.6	78-125	0			
1,2-Dichloropropane	20.07	0.83	20	0	100	75-125	0			
1,3,5-Trimethylbenzene	18.73	0.95	20	0	93.6	75-130	0			
1,3-Dichlorobenzene	18.52	0.96	20	0	92.6	75-130	0			
1,4-Dichlorobenzene	18.56	0.71	20	0	92.8	75-130	0			
2-Butanone	19	2.0	20	0	95	55-150	0			
2-Hexanone	19.93	0.42	20	0	99.6	60-135	0			
4-Methyl-2-pentanone	28.68	0.40	20	0	143	77-178	0			
Benzene	20.44	1.0	20	0	102	85-125	0			
Bromochloromethane	18.16	0.66	20	0	90.8	72-141	0			
Bromodichloromethane	19.18	0.78	20	0	95.9	75-125	0			
Bromoform	16.68	2.6	20	0	83.4	60-125	0			
Bromomethane	19.91	1.3	20	0	99.6	30-185	0			
Carbon disulfide	21.3	0.76	20	0	106	60-165	0			
Carbon tetrachloride	21.39	1.0	20	0	107	65-140	0			
Chlorobenzene	18.72	0.90	20	0	93.6	80-120	0			
Chloroethane	16.83	0.97	20	0	84.2	50-140	0			
Chloroform	17.63	0.86	20	0	88.2	80-130	0			
Chloromethane	15.46	0.57	20	0	77.3	46-148	0			
cis-1,2-Dichloroethene	18.16	0.85	20	0	90.8	75-134	0			
cis-1,3-Dichloropropene	18.92	1.3	20	0	94.6	70-130	0			
Dibromochloromethane	18.56	1.2	20	0	92.8	60-115	0			
Dichlorodifluoromethane	16.75	0.44	20	0	83.8	20-120	0			
Ethylbenzene	19.12	1.3	20	0	95.6	85-125	0			
Isopropylbenzene	19.03	1.0	20	0	95.2	80-127	0			
m,p-Xylene	38.65	3.3	40	0	96.6	75-130	0			
Methyl tert-butyl ether	16.82	0.40	20	0	84.1	80-130	0			
Methylene chloride	19.54	1.8	20	0	97.7	75-140	0			
Naphthalene	18.53	0.59	20	0	92.6	55-160	0			
o-Xylene	19.14	1.2	20	0	95.7	80-125	0			
Styrene	19.26	0.79	20	0	96.3	83-137	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101842
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: R223840b	Instrument ID VMS5		Method: SW8260B				
Tetrachloroethene	20.25	0.91	20	0	101	68-166	0
Toluene	19.38	1.2	20	0	96.9	85-125	0
trans-1,2-Dichloroethene	19.76	0.93	20	0	98.8	80-140	0
trans-1,3-Dichloropropene	18.16	2.7	20	0	90.8	56-132	0
Trichloroethene	19.96	0.99	20	0	99.8	84-130	0
Trichlorofluoromethane	18.25	0.66	20	0	91.2	60-140	0
Vinyl chloride	16.44	0.68	20	0	82.2	50-136	0
Xylenes, Total	57.79	4.4	60	0	96.3	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>20.57</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>103</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>20.11</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>101</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>19.31</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>96.6</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>20.06</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>100</i>	<i>85-110</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101842
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **R223840b** Instrument ID **VMS5** Method: **SW8260B**

MS				Sample ID: 1711015-01A MS			Units: µg/L		Analysis Date: 11/6/2017 09:00 AM	
Client ID:				Run ID: VMS5_171105A			SeqNo: 4742516		Prep Date:	
							DF: 5			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	103.8	6.0	100	0	104	75-130	0			
1,1,2,2-Tetrachloroethane	96.85	3.1	100	0	96.8	75-130	0			
1,1,2-Trichloroethane	89.15	6.6	100	0	89.2	75-125	0			
1,1-Dichloroethane	99.95	5.2	100	0	100	75-133	0			
1,1-Dichloroethene	122.6	4.6	100	0	123	70-145	0			
1,2,3-Trichlorobenzene	72.95	2.8	100	0	73	70-140	0			
1,2,4-Trichlorobenzene	78.4	3.6	100	0	78.4	70-135	0			
1,2,4-Trimethylbenzene	90.55	6.2	100	2.55	88	75-130	0			
1,2-Dibromo-3-chloropropane	74.6	16	100	0	74.6	60-130	0			
1,2-Dibromoethane	90.2	16	100	0	90.2	90-195	0			
1,2-Dichlorobenzene	82.7	3.6	100	0	82.7	70-130	0			
1,2-Dichloroethane	94.35	2.8	100	0	94.4	78-125	0			
1,2-Dichloropropane	95.2	4.2	100	0	95.2	75-125	0			
1,3,5-Trimethylbenzene	92.9	4.8	100	2.8	90.1	75-130	0			
1,3-Dichlorobenzene	86.9	4.8	100	0	86.9	75-130	0			
1,4-Dichlorobenzene	86.5	3.6	100	0	86.5	75-130	0			
2-Butanone	96.35	9.8	100	0	96.4	55-150	0			
2-Hexanone	95.25	2.1	100	0	95.2	60-135	0			
4-Methyl-2-pentanone	130.4	2.0	100	0	130	77-178	0			
Benzene	299.2	5.0	100	206.6	92.6	85-125	0			
Bromochloromethane	93.35	3.3	100	0	93.4	72-141	0			
Bromodichloromethane	91.75	3.9	100	0	91.8	75-125	0			
Bromoform	72.9	13	100	0	72.9	60-125	0			
Bromomethane	89.35	6.3	100	0	89.4	30-185	0			
Carbon disulfide	110.6	3.8	100	0	111	60-165	0			
Carbon tetrachloride	106.8	5.2	100	0	107	65-140	0			
Chlorobenzene	89.1	4.5	100	0	89.1	80-120	0			
Chloroethane	86.7	4.8	100	0	86.7	50-140	0			
Chloroform	89.9	4.3	100	0	89.9	80-130	0			
Chloromethane	77.3	2.8	100	0	77.3	46-148	0			
cis-1,2-Dichloroethene	90.25	4.2	100	0	90.2	75-134	0			
cis-1,3-Dichloropropene	82.6	6.6	100	0	82.6	70-130	0			
Dibromochloromethane	86.7	6.2	100	0	86.7	60-115	0			
Dichlorodifluoromethane	85.7	2.2	100	0	85.7	20-120	0			
Ethylbenzene	99.6	6.7	100	6.75	92.8	85-125	0			
Isopropylbenzene	93.95	5.2	100	0	94	80-127	0			
m,p-Xylene	239.8	16	200	51.4	94.2	75-130	0			
Methyl tert-butyl ether	81.3	2.0	100	0	81.3	80-130	0			
Methylene chloride	99.65	9.2	100	0	99.6	75-140	0			
Naphthalene	76.25	3.0	100	0	76.2	55-160	0			
o-Xylene	92.25	5.9	100	0	92.2	80-125	0			
Styrene	89.7	4.0	100	0	89.7	83-137	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101842
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: R223840b	Instrument ID VMS5		Method: SW8260B				
Tetrachloroethene	98.05	4.6	100	0	98	68-166	0
Toluene	96.85	6.1	100	3.7	93.2	85-125	0
trans-1,2-Dichloroethene	102.9	4.6	100	0	103	80-140	0
trans-1,3-Dichloropropene	79.75	14	100	0	79.8	56-132	0
Trichloroethene	94.6	5.0	100	0	94.6	84-130	0
Trichlorofluoromethane	97.35	3.3	100	0	97.4	60-140	0
Vinyl chloride	86.3	3.4	100	0	86.3	50-136	0
Xylenes, Total	332.1	22	300	51.4	93.6	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>104.2</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>104</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>103</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>103</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>99.4</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>99.4</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>100</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>100</i>	<i>85-110</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101842
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **R223840b** Instrument ID **VMS5** Method: **SW8260B**

MSD				Sample ID: 1711015-01A MSD			Units: µg/L		Analysis Date: 11/6/2017 09:25 AM	
Client ID:			Run ID: VMS5_171105A			SeqNo: 4742517		Prep Date:		DF: 5
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	107.6	6.0	100	0	108	75-130	103.8	3.64	30	
1,1,2,2-Tetrachloroethane	97.35	3.1	100	0	97.4	75-130	96.85	0.515	30	
1,1,2-Trichloroethane	91.5	6.6	100	0	91.5	75-125	89.15	2.6	30	
1,1-Dichloroethane	102	5.2	100	0	102	75-133	99.95	1.98	30	
1,1-Dichloroethene	125.2	4.6	100	0	125	70-145	122.6	2.06	30	
1,2,3-Trichlorobenzene	79.85	2.8	100	0	79.8	70-140	72.95	9.03	30	
1,2,4-Trichlorobenzene	82.85	3.6	100	0	82.8	70-135	78.4	5.52	30	
1,2,4-Trimethylbenzene	94.8	6.2	100	2.55	92.2	75-130	90.55	4.59	30	
1,2-Dibromo-3-chloropropane	77.95	16	100	0	78	60-130	74.6	4.39	30	
1,2-Dibromoethane	94	16	100	0	94	90-195	90.2	4.13	30	
1,2-Dichlorobenzene	87.05	3.6	100	0	87	70-130	82.7	5.13	30	
1,2-Dichloroethane	99.1	2.8	100	0	99.1	78-125	94.35	4.91	30	
1,2-Dichloropropane	97.95	4.2	100	0	98	75-125	95.2	2.85	30	
1,3,5-Trimethylbenzene	97.7	4.8	100	2.8	94.9	75-130	92.9	5.04	30	
1,3-Dichlorobenzene	89.45	4.8	100	0	89.4	75-130	86.9	2.89	30	
1,4-Dichlorobenzene	88.45	3.6	100	0	88.4	75-130	86.5	2.23	30	
2-Butanone	99.3	9.8	100	0	99.3	55-150	96.35	3.02	30	
2-Hexanone	92.35	2.1	100	0	92.4	60-135	95.25	3.09	30	
4-Methyl-2-pentanone	131.5	2.0	100	0	132	77-178	130.4	0.802	30	
Benzene	295.5	5.0	100	206.6	88.8	85-125	299.2	1.26	30	
Bromochloromethane	96.25	3.3	100	0	96.2	72-141	93.35	3.06	30	
Bromodichloromethane	93.7	3.9	100	0	93.7	75-125	91.75	2.1	30	
Bromoform	76.9	13	100	0	76.9	60-125	72.9	5.34	30	
Bromomethane	100.8	6.3	100	0	101	30-185	89.35	12.1	30	
Carbon disulfide	114.6	3.8	100	0	115	60-165	110.6	3.51	30	
Carbon tetrachloride	110.4	5.2	100	0	110	65-140	106.8	3.36	30	
Chlorobenzene	90.55	4.5	100	0	90.6	80-120	89.1	1.61	30	
Chloroethane	89.3	4.8	100	0	89.3	50-140	86.7	2.95	30	
Chloroform	92.35	4.3	100	0	92.4	80-130	89.9	2.69	30	
Chloromethane	79.1	2.8	100	0	79.1	46-148	77.3	2.3	30	
cis-1,2-Dichloroethene	93.25	4.2	100	0	93.2	75-134	90.25	3.27	30	
cis-1,3-Dichloropropene	86.4	6.6	100	0	86.4	70-130	82.6	4.5	30	
Dibromochloromethane	88.75	6.2	100	0	88.8	60-115	86.7	2.34	30	
Dichlorodifluoromethane	87.8	2.2	100	0	87.8	20-120	85.7	2.42	30	
Ethylbenzene	101.6	6.7	100	6.75	94.8	85-125	99.6	1.99	30	
Isopropylbenzene	96.3	5.2	100	0	96.3	80-127	93.95	2.47	30	
m,p-Xylene	241.8	16	200	51.4	95.2	75-130	239.8	0.83	30	
Methyl tert-butyl ether	85.2	2.0	100	0	85.2	80-130	81.3	4.68	30	
Methylene chloride	102.4	9.2	100	0	102	75-140	99.65	2.72	30	
Naphthalene	81.15	3.0	100	0	81.2	55-160	76.25	6.23	30	
o-Xylene	94.7	5.9	100	0	94.7	80-125	92.25	2.62	30	
Styrene	93.4	4.0	100	0	93.4	83-137	89.7	4.04	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101842
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: R223840b	Instrument ID VMS5			Method: SW8260B					
Tetrachloroethene	99.8	4.6	100	0	99.8	68-166	98.05	1.77	30
Toluene	99.3	6.1	100	3.7	95.6	85-125	96.85	2.5	30
trans-1,2-Dichloroethene	107.4	4.6	100	0	107	80-140	102.9	4.23	30
trans-1,3-Dichloropropene	83.4	14	100	0	83.4	56-132	79.75	4.47	30
Trichloroethene	96.65	5.0	100	0	96.6	84-130	94.6	2.14	30
Trichlorofluoromethane	97.7	3.3	100	0	97.7	60-140	97.35	0.359	30
Vinyl chloride	88.1	3.4	100	0	88.1	50-136	86.3	2.06	30
Xylenes, Total	336.6	22	300	51.4	95	80-126	332.1	1.33	30
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>106</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>106</i>	<i>75-120</i>	<i>104.2</i>	<i>1.71</i>	<i>30</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>101.1</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>101</i>	<i>80-110</i>	<i>103</i>	<i>1.86</i>	<i>30</i>
<i>Surr: Dibromofluoromethane</i>	<i>100</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>100</i>	<i>85-115</i>	<i>99.4</i>	<i>0.652</i>	<i>30</i>
<i>Surr: Toluene-d8</i>	<i>99.75</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>99.8</i>	<i>85-110</i>	<i>100</i>	<i>0.3</i>	<i>30</i>

The following samples were analyzed in this batch:

17101842-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Cincinnati, OH
+1 513 733 5336

Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 46251

Houston, TX
+1 281 530 5656

Middletown, PA
+1 717 944 5541

Spring City, PA
+1 610 948 4903

Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Customer Information				Project Information				ALS Project Manager: _____ ALS Work Order #: 17101842											
Purchase Order		Project Name	Site ID: 12.17	A	VOLs														
Work Order		Project Number	21-413653	B															
Company Name	Ramboll Environ US Corporation	Bill To Company	Ramboll Environ US Corporation	C															
Send Report To	Danna Volk	Invoice Attn	Accounts Payable	D															
Address	175 N Corporate Drive Suite 180	Address	175 N Corporate Drive Suite 180	E															
City/State/Zip	Brookfield, WI 53045	City/State/Zip	Brookfield, WI 53045	F															
Phone	(262) 901-0099	Phone	(262) 901-0099	G															
Fax	(262) 901-0079	Fax	(262) 901-0079	H															
e-Mail Address	dvolk@ramboll.com	e-Mail Address	dvolk@ramboll.com	I															
				J															

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	W5-8-1	10/24/17	1315	GW	HCl	3	X										
2	TRIP BLANK				HCl	1	X										
3	TEMP BLANK					1											
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign Tyler Burgett Tyler Burgett				Shipment Method FedEx ON		Turnaround Time in Business Days (BD) <input checked="" type="checkbox"/> 10 BD <input type="checkbox"/> 5 BD <input type="checkbox"/> 3 BD <input type="checkbox"/> 2 BD <input type="checkbox"/> 1 BD				Results Due Date:		
Relinquished by: Tyler Burgett		Date: 10/24/17	Time: 1400	Received by: FEDEx		Notes:						
Relinquished by: FEDEx		Date: 10/27/17	Time: 0930	Received by (Laboratory):		Cooler ID SR2	Cooler Temp 2.8°C	QC Package: (Check One Box Below)				
Logged by (Laboratory): Kew		Date: 10/27/17	Time: 1205	Checked by (Laboratory):		<input type="checkbox"/> Level II Std QC <input type="checkbox"/> TRRP Checklist <input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> Level IV SW846/CLP <input type="checkbox"/> Other						
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035												

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Sample Receipt Checklist

Client Name: **ENVIRONINT - WI**

Date/Time Received: **27-Oct-17 09:30**

Work Order: **17101842**

Received by: **KRW**

Checklist completed by Keith Wurenga
eSignature

27-Oct-17
Date

Reviewed by: Chad Whelton
eSignature

30-Oct-17
Date

Matrices: **Water**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>2.8/2.8 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>10/27/2017 12:09:38 PM</u>		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



14-Dec-2017

Donna Volk
Ramboll Environ US Corporation
175 N Corporate Drive
Suite 160
Brookfield, WI 53045

Re: **Site ID: 12.17 (21-41365B)**

Work Order: **17101184**

Dear Donna,

ALS Environmental received 7 samples on 18-Oct-2017 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 43.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Work Order: 17101184

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
17101184-01	WS-B-1 (4-5')	Soil		10/17/2017 11:15	10/18/2017 09:30	<input type="checkbox"/>
17101184-02	WS-B-1 (6.5-7.5')	Soil		10/17/2017 11:25	10/18/2017 09:30	<input type="checkbox"/>
17101184-03	WS-B-2 (1-2')	Soil		10/17/2017 12:00	10/18/2017 09:30	<input type="checkbox"/>
17101184-04	WS-B-2 (3.5-4.5')	Soil		10/17/2017 12:10	10/18/2017 09:30	<input type="checkbox"/>
17101184-05	WS-B-3 (3-4')	Soil		10/17/2017 12:45	10/18/2017 09:30	<input type="checkbox"/>
17101184-06	WS-B-3 (8-9')	Soil		10/17/2017 12:55	10/18/2017 09:30	<input type="checkbox"/>
17101184-07	Trip Blank	Soil		10/17/2017	10/18/2017 09:30	<input type="checkbox"/>

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Work Order: 17101184

Case Narrative

Samples for the above noted Work Order were received on 10/18/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, sample condition, preservation, and temperature compliance.

In order to ensure compliance with NR 149 criteria, please note the following report format:

- (1) The Limit of Detection (LOD) is reported as the MDL (Method Detection Limit)
- (2) The Limit of Quantitation (LOQ) is reported as the PQL (Practical Quantitation Limit)
- (3) All reported concentrations, including those for the LOD and LOQ, are adjusted for any required dilutions
- (4) All reported concentrations, including those for the LOD and LOQ, are adjusted for moisture content when samples are reported on a dry weight basis.

Samples were analyzed according to the analytical methodology previously documented in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Detail as to the associated samples can be found at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, acronyms, and units utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Volatile Organics

Batch 109470, Method WI_VOC_S, Sample 17101184-04A MS/MSD: The MS/MSD recovery was below the lower control limit for Chloroethane. The corresponding result in the parent sample may be biased low.

Batch 109470, Method WI_VOC_S, Sample 17101184-04A MSD: The MSD recovery was above the upper control limit for Tetrachloroethene. However, the MS recovery and the RPD between the MS and MSD were within control limits. No qualification is required.

Batch 109470, Method WI_VOC_S, Sample 17101184-01A: This sample has a result for a common laboratory contaminant that was above the method detection limit that should be considered as probable laboratory contamination. Note all associated blanks were non-detect for this compound: 2-Butanone

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
WorkOrder: 17101184

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-1 (4-5")
Collection Date: 10/17/2017 11:15 AM

Work Order: 17101184
Lab ID: 17101184-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/27/17		Analyst: RSH
Mercury	0.070		0.0061	0.020	mg/Kg-dry	1	10/27/2017 15:07
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/23/17		Analyst: JF
Arsenic	5.1		0.11	0.37	mg/Kg-dry	1	10/23/2017 18:21
Barium	120		0.11	0.35	mg/Kg-dry	1	10/23/2017 18:21
Cadmium	0.58		0.0061	0.021	mg/Kg-dry	1	10/23/2017 18:21
Chromium	7.8		0.036	0.12	mg/Kg-dry	1	10/23/2017 18:21
Lead	6.0		0.012	0.039	mg/Kg-dry	1	10/23/2017 18:21
Selenium	3.0		0.23	0.76	mg/Kg-dry	1	10/23/2017 18:21
Silver	0.034		0.0061	0.021	mg/Kg-dry	1	10/23/2017 18:21
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 10/19/17		Analyst: RM
2-Chloronaphthalene	U		8.6	86	µg/Kg-dry	1	10/19/2017 18:28
2-Methylnaphthalene	U		14	86	µg/Kg-dry	1	10/19/2017 18:28
Acenaphthene	U		6.1	86	µg/Kg-dry	1	10/19/2017 18:28
Acenaphthylene	U		7.6	86	µg/Kg-dry	1	10/19/2017 18:28
Anthracene	U		3.2	86	µg/Kg-dry	1	10/19/2017 18:28
Benzo(a)anthracene	U		5.3	86	µg/Kg-dry	1	10/19/2017 18:28
Benzo(a)pyrene	U		2.2	86	µg/Kg-dry	1	10/19/2017 18:28
Benzo(b)fluoranthene	U		3.3	86	µg/Kg-dry	1	10/19/2017 18:28
Benzo(g,h,i)perylene	U		5.8	86	µg/Kg-dry	1	10/19/2017 18:28
Benzo(k)fluoranthene	U		4.5	86	µg/Kg-dry	1	10/19/2017 18:28
Chrysene	U		3.3	86	µg/Kg-dry	1	10/19/2017 18:28
Dibenzo(a,h)anthracene	U		2.8	86	µg/Kg-dry	1	10/19/2017 18:28
Fluoranthene	U		2.5	86	µg/Kg-dry	1	10/19/2017 18:28
Fluorene	U		2.8	86	µg/Kg-dry	1	10/19/2017 18:28
Indeno(1,2,3-cd)pyrene	U		2.7	86	µg/Kg-dry	1	10/19/2017 18:28
Naphthalene	U		16	86	µg/Kg-dry	1	10/19/2017 18:28
Phenanthrene	110		3.0	86	µg/Kg-dry	1	10/19/2017 18:28
Pyrene	U		3.2	86	µg/Kg-dry	1	10/19/2017 18:28
Surr: 2-Fluorobiphenyl	83.1			20-140	%REC	1	10/19/2017 18:28
Surr: 4-Terphenyl-d14	76.6			22-172	%REC	1	10/19/2017 18:28
Surr: Nitrobenzene-d5	49.6			28-140	%REC	1	10/19/2017 18:28
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 10/24/17		Analyst: BG
1,1,1-Trichloroethane	U		46	150	µg/Kg-dry	1	10/26/2017 02:12
1,1,2,2-Tetrachloroethane	U		39	130	µg/Kg-dry	1	10/26/2017 02:12
1,1,2-Trichloroethane	U		49	160	µg/Kg-dry	1	10/26/2017 02:12
1,1-Dichloroethane	U		41	140	µg/Kg-dry	1	10/26/2017 02:12
1,1-Dichloroethene	U		44	150	µg/Kg-dry	1	10/26/2017 02:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-1 (4-5")
Collection Date: 10/17/2017 11:15 AM

Work Order: 17101184
Lab ID: 17101184-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		72	240	µg/Kg-dry	1	10/26/2017 02:12
1,2,4-Trichlorobenzene	U		120	400	µg/Kg-dry	1	10/26/2017 02:12
1,2,4-Trimethylbenzene	U		33	110	µg/Kg-dry	1	10/26/2017 02:12
1,2-Dibromo-3-chloropropane	U		66	220	µg/Kg-dry	1	10/26/2017 02:12
1,2-Dibromoethane	U		54	180	µg/Kg-dry	1	10/26/2017 02:12
1,2-Dichlorobenzene	U		48	160	µg/Kg-dry	1	10/26/2017 02:12
1,2-Dichloroethane	U		44	150	µg/Kg-dry	1	10/26/2017 02:12
1,2-Dichloropropane	U		45	150	µg/Kg-dry	1	10/26/2017 02:12
1,3,5-Trimethylbenzene	U		71	240	µg/Kg-dry	1	10/26/2017 02:12
1,3-Dichlorobenzene	U		52	170	µg/Kg-dry	1	10/26/2017 02:12
1,4-Dichlorobenzene	U		42	140	µg/Kg-dry	1	10/26/2017 02:12
2-Butanone	630	J	220	730	µg/Kg-dry	1	10/26/2017 02:12
2-Hexanone	U		110	360	µg/Kg-dry	1	10/26/2017 02:12
4-Methyl-2-pentanone	U		120	400	µg/Kg-dry	1	10/26/2017 02:12
Benzene	U		37	120	µg/Kg-dry	1	10/26/2017 02:12
Bromochloromethane	U		73	240	µg/Kg-dry	1	10/26/2017 02:12
Bromodichloromethane	U		44	150	µg/Kg-dry	1	10/26/2017 02:12
Bromoform	U		57	190	µg/Kg-dry	1	10/26/2017 02:12
Bromomethane	U		70	230	µg/Kg-dry	1	10/26/2017 02:12
Carbon disulfide	U		55	180	µg/Kg-dry	1	10/26/2017 02:12
Carbon tetrachloride	U		29	96	µg/Kg-dry	1	10/26/2017 02:12
Chlorobenzene	U		49	160	µg/Kg-dry	1	10/26/2017 02:12
Chloroethane	U		100	340	µg/Kg-dry	1	10/26/2017 02:12
Chloroform	U		55	180	µg/Kg-dry	1	10/26/2017 02:12
Chloromethane	U		66	220	µg/Kg-dry	1	10/26/2017 02:12
cis-1,2-Dichloroethene	U		46	150	µg/Kg-dry	1	10/26/2017 02:12
cis-1,3-Dichloropropene	U		62	210	µg/Kg-dry	1	10/26/2017 02:12
Cyclohexane	U		81	270	µg/Kg-dry	1	10/26/2017 02:12
Dibromochloromethane	U		37	120	µg/Kg-dry	1	10/26/2017 02:12
Dichlorodifluoromethane	U		72	240	µg/Kg-dry	1	10/26/2017 02:12
Ethylbenzene	U		38	130	µg/Kg-dry	1	10/26/2017 02:12
Isopropylbenzene	U		64	210	µg/Kg-dry	1	10/26/2017 02:12
m,p-Xylene	U		73	240	µg/Kg-dry	1	10/26/2017 02:12
Methyl tert-butyl ether	U		53	180	µg/Kg-dry	1	10/26/2017 02:12
Methylcyclohexane	U		70	230	µg/Kg-dry	1	10/26/2017 02:12
Methylene chloride	U		74	250	µg/Kg-dry	1	10/26/2017 02:12
Naphthalene	U		28	93	µg/Kg-dry	1	10/26/2017 02:12
o-Xylene	U		53	180	µg/Kg-dry	1	10/26/2017 02:12
Styrene	U		110	380	µg/Kg-dry	1	10/26/2017 02:12
Tetrachloroethene	U		80	270	µg/Kg-dry	1	10/26/2017 02:12

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-1 (4-5')
Collection Date: 10/17/2017 11:15 AM

Work Order: 17101184
Lab ID: 17101184-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Toluene	U		54	180	µg/Kg-dry	1	10/26/2017 02:12
trans-1,2-Dichloroethene	U		46	150	µg/Kg-dry	1	10/26/2017 02:12
trans-1,3-Dichloropropene	U		29	97	µg/Kg-dry	1	10/26/2017 02:12
Trichloroethene	U		43	140	µg/Kg-dry	1	10/26/2017 02:12
Trichlorofluoromethane	U		31	100	µg/Kg-dry	1	10/26/2017 02:12
Vinyl chloride	U		51	170	µg/Kg-dry	1	10/26/2017 02:12
Xylenes, Total	U		130	420	µg/Kg-dry	1	10/26/2017 02:12
Surr: 1,2-Dichloroethane-d4	100			70-130	%REC	1	10/26/2017 02:12
Surr: 4-Bromofluorobenzene	99.8			70-130	%REC	1	10/26/2017 02:12
Surr: Dibromofluoromethane	97.8			70-130	%REC	1	10/26/2017 02:12
Surr: Toluene-d8	94.4			70-130	%REC	1	10/26/2017 02:12
MOISTURE			Method: SW3550C				Analyst: MT
Moisture	52		0.025	0.050	% of sample	1	10/19/2017 12:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-1 (6.5-7.5')
Collection Date: 10/17/2017 11:25 AM

Work Order: 17101184
Lab ID: 17101184-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/27/17		Analyst: RSH
Mercury	0.027		0.0031	0.010	mg/Kg-dry	1	10/27/2017 15:09
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/23/17		Analyst: JF
Arsenic	5.6		0.062	0.21	mg/Kg-dry	1	10/23/2017 18:23
Barium	49		0.058	0.20	mg/Kg-dry	1	10/23/2017 18:23
Cadmium	0.10		0.0033	0.012	mg/Kg-dry	1	10/23/2017 18:23
Chromium	9.5		0.020	0.067	mg/Kg-dry	1	10/23/2017 18:23
Lead	11		0.0067	0.022	mg/Kg-dry	1	10/23/2017 18:23
Selenium	1.7		0.13	0.42	mg/Kg-dry	1	10/23/2017 18:23
Silver	0.044		0.0033	0.012	mg/Kg-dry	1	10/23/2017 18:23
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 10/19/17		Analyst: RM
2-Chloronaphthalene	U		5.2	52	µg/Kg-dry	1	10/19/2017 18:42
2-Methylnaphthalene	U		8.4	52	µg/Kg-dry	1	10/19/2017 18:42
Acenaphthene	U		3.7	52	µg/Kg-dry	1	10/19/2017 18:42
Acenaphthylene	U		4.6	52	µg/Kg-dry	1	10/19/2017 18:42
Anthracene	U		1.9	52	µg/Kg-dry	1	10/19/2017 18:42
Benzo(a)anthracene	U		3.2	52	µg/Kg-dry	1	10/19/2017 18:42
Benzo(a)pyrene	U		1.3	52	µg/Kg-dry	1	10/19/2017 18:42
Benzo(b)fluoranthene	U		2.0	52	µg/Kg-dry	1	10/19/2017 18:42
Benzo(g,h,i)perylene	U		3.5	52	µg/Kg-dry	1	10/19/2017 18:42
Benzo(k)fluoranthene	U		2.7	52	µg/Kg-dry	1	10/19/2017 18:42
Chrysene	U		2.0	52	µg/Kg-dry	1	10/19/2017 18:42
Dibenzo(a,h)anthracene	U		1.7	52	µg/Kg-dry	1	10/19/2017 18:42
Fluoranthene	U		1.5	52	µg/Kg-dry	1	10/19/2017 18:42
Fluorene	U		1.7	52	µg/Kg-dry	1	10/19/2017 18:42
Indeno(1,2,3-cd)pyrene	U		1.6	52	µg/Kg-dry	1	10/19/2017 18:42
Naphthalene	U		9.7	52	µg/Kg-dry	1	10/19/2017 18:42
Phenanthrene	U		1.8	52	µg/Kg-dry	1	10/19/2017 18:42
Pyrene	U		1.9	52	µg/Kg-dry	1	10/19/2017 18:42
Surr: 2-Fluorobiphenyl	92.1			20-140	%REC	1	10/19/2017 18:42
Surr: 4-Terphenyl-d14	117			22-172	%REC	1	10/19/2017 18:42
Surr: Nitrobenzene-d5	67.3			28-140	%REC	1	10/19/2017 18:42
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 10/24/17		Analyst: BG
1,1,1-Trichloroethane	U		13	43	µg/Kg-dry	1	10/26/2017 02:36
1,1,2,2-Tetrachloroethane	U		11	36	µg/Kg-dry	1	10/26/2017 02:36
1,1,2-Trichloroethane	U		13	45	µg/Kg-dry	1	10/26/2017 02:36
1,1-Dichloroethane	U		11	38	µg/Kg-dry	1	10/26/2017 02:36
1,1-Dichloroethene	U		12	40	µg/Kg-dry	1	10/26/2017 02:36

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-1 (6.5-7.5')
Collection Date: 10/17/2017 11:25 AM

Work Order: 17101184
Lab ID: 17101184-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		20	66	µg/Kg-dry	1	10/26/2017 02:36
1,2,4-Trichlorobenzene	U		33	110	µg/Kg-dry	1	10/26/2017 02:36
1,2,4-Trimethylbenzene	U		9.0	30	µg/Kg-dry	1	10/26/2017 02:36
1,2-Dibromo-3-chloropropane	U		18	61	µg/Kg-dry	1	10/26/2017 02:36
1,2-Dibromoethane	U		15	50	µg/Kg-dry	1	10/26/2017 02:36
1,2-Dichlorobenzene	U		13	45	µg/Kg-dry	1	10/26/2017 02:36
1,2-Dichloroethane	U		12	41	µg/Kg-dry	1	10/26/2017 02:36
1,2-Dichloropropane	U		12	41	µg/Kg-dry	1	10/26/2017 02:36
1,3,5-Trimethylbenzene	U		20	66	µg/Kg-dry	1	10/26/2017 02:36
1,3-Dichlorobenzene	U		14	48	µg/Kg-dry	1	10/26/2017 02:36
1,4-Dichlorobenzene	U		12	39	µg/Kg-dry	1	10/26/2017 02:36
2-Butanone	U		61	200	µg/Kg-dry	1	10/26/2017 02:36
2-Hexanone	U		30	99	µg/Kg-dry	1	10/26/2017 02:36
4-Methyl-2-pentanone	U		33	110	µg/Kg-dry	1	10/26/2017 02:36
Benzene	U		10	34	µg/Kg-dry	1	10/26/2017 02:36
Bromochloromethane	U		20	67	µg/Kg-dry	1	10/26/2017 02:36
Bromodichloromethane	U		12	40	µg/Kg-dry	1	10/26/2017 02:36
Bromoform	U		16	53	µg/Kg-dry	1	10/26/2017 02:36
Bromomethane	U		20	65	µg/Kg-dry	1	10/26/2017 02:36
Carbon disulfide	U		15	51	µg/Kg-dry	1	10/26/2017 02:36
Carbon tetrachloride	U		8.0	27	µg/Kg-dry	1	10/26/2017 02:36
Chlorobenzene	U		14	45	µg/Kg-dry	1	10/26/2017 02:36
Chloroethane	U		29	96	µg/Kg-dry	1	10/26/2017 02:36
Chloroform	U		15	51	µg/Kg-dry	1	10/26/2017 02:36
Chloromethane	U		18	61	µg/Kg-dry	1	10/26/2017 02:36
cis-1,2-Dichloroethene	U		13	42	µg/Kg-dry	1	10/26/2017 02:36
cis-1,3-Dichloropropene	U		17	57	µg/Kg-dry	1	10/26/2017 02:36
Cyclohexane	U		22	75	µg/Kg-dry	1	10/26/2017 02:36
Dibromochloromethane	U		10	34	µg/Kg-dry	1	10/26/2017 02:36
Dichlorodifluoromethane	U		20	66	µg/Kg-dry	1	10/26/2017 02:36
Ethylbenzene	U		10	35	µg/Kg-dry	1	10/26/2017 02:36
Isopropylbenzene	U		18	59	µg/Kg-dry	1	10/26/2017 02:36
m,p-Xylene	U		20	67	µg/Kg-dry	1	10/26/2017 02:36
Methyl tert-butyl ether	U		15	49	µg/Kg-dry	1	10/26/2017 02:36
Methylcyclohexane	U		19	65	µg/Kg-dry	1	10/26/2017 02:36
Methylene chloride	U		21	69	µg/Kg-dry	1	10/26/2017 02:36
Naphthalene	U		7.7	26	µg/Kg-dry	1	10/26/2017 02:36
o-Xylene	U		15	49	µg/Kg-dry	1	10/26/2017 02:36
Styrene	U		32	110	µg/Kg-dry	1	10/26/2017 02:36
Tetrachloroethene	U		22	74	µg/Kg-dry	1	10/26/2017 02:36

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-1 (6.5-7.5')
Collection Date: 10/17/2017 11:25 AM

Work Order: 17101184
Lab ID: 17101184-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Toluene	U		15	50	µg/Kg-dry	1	10/26/2017 02:36
trans-1,2-Dichloroethene	U		13	42	µg/Kg-dry	1	10/26/2017 02:36
trans-1,3-Dichloropropene	U		8.0	27	µg/Kg-dry	1	10/26/2017 02:36
Trichloroethene	U		12	40	µg/Kg-dry	1	10/26/2017 02:36
Trichlorofluoromethane	U		8.7	29	µg/Kg-dry	1	10/26/2017 02:36
Vinyl chloride	U		14	48	µg/Kg-dry	1	10/26/2017 02:36
Xylenes, Total	U		35	120	µg/Kg-dry	1	10/26/2017 02:36
Surr: 1,2-Dichloroethane-d4	100			70-130	%REC	1	10/26/2017 02:36
Surr: 4-Bromofluorobenzene	99.2			70-130	%REC	1	10/26/2017 02:36
Surr: Dibromofluoromethane	98.6			70-130	%REC	1	10/26/2017 02:36
Surr: Toluene-d8	93.6			70-130	%REC	1	10/26/2017 02:36
MOISTURE			Method: SW3550C				Analyst: MT
Moisture	20		0.025	0.050	% of sample	1	10/19/2017 12:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-2 (1-2')
Collection Date: 10/17/2017 12:00 PM

Work Order: 17101184
Lab ID: 17101184-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/27/17		Analyst: RSH
Mercury	0.017		0.0033	0.011	mg/Kg-dry	1	10/27/2017 15:12
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/23/17		Analyst: JF
Arsenic	2.4		0.054	0.18	mg/Kg-dry	1	10/23/2017 18:25
Barium	22		0.051	0.17	mg/Kg-dry	1	10/23/2017 18:25
Cadmium	0.056		0.0029	0.010	mg/Kg-dry	1	10/23/2017 18:25
Chromium	6.0		0.017	0.058	mg/Kg-dry	1	10/23/2017 18:25
Lead	6.1		0.0058	0.019	mg/Kg-dry	1	10/23/2017 18:25
Selenium	0.87		0.11	0.36	mg/Kg-dry	1	10/23/2017 18:25
Silver	0.010	J	0.0029	0.010	mg/Kg-dry	1	10/23/2017 18:25
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 10/19/17		Analyst: RM
2-Chloronaphthalene	U		4.8	48	µg/Kg-dry	1	10/19/2017 18:56
2-Methylnaphthalene	U		7.9	48	µg/Kg-dry	1	10/19/2017 18:56
Acenaphthene	U		3.4	48	µg/Kg-dry	1	10/19/2017 18:56
Acenaphthylene	U		4.3	48	µg/Kg-dry	1	10/19/2017 18:56
Anthracene	U		1.8	48	µg/Kg-dry	1	10/19/2017 18:56
Benzo(a)anthracene	U		3.0	48	µg/Kg-dry	1	10/19/2017 18:56
Benzo(a)pyrene	U		1.2	48	µg/Kg-dry	1	10/19/2017 18:56
Benzo(b)fluoranthene	U		1.9	48	µg/Kg-dry	1	10/19/2017 18:56
Benzo(g,h,i)perylene	U		3.2	48	µg/Kg-dry	1	10/19/2017 18:56
Benzo(k)fluoranthene	U		2.5	48	µg/Kg-dry	1	10/19/2017 18:56
Chrysene	U		1.9	48	µg/Kg-dry	1	10/19/2017 18:56
Dibenzo(a,h)anthracene	U		1.6	48	µg/Kg-dry	1	10/19/2017 18:56
Fluoranthene	U		1.4	48	µg/Kg-dry	1	10/19/2017 18:56
Fluorene	U		1.6	48	µg/Kg-dry	1	10/19/2017 18:56
Indeno(1,2,3-cd)pyrene	U		1.5	48	µg/Kg-dry	1	10/19/2017 18:56
Naphthalene	U		9.1	48	µg/Kg-dry	1	10/19/2017 18:56
Phenanthrene	U		1.7	48	µg/Kg-dry	1	10/19/2017 18:56
Pyrene	U		1.8	48	µg/Kg-dry	1	10/19/2017 18:56
Surr: 2-Fluorobiphenyl	86.2			20-140	%REC	1	10/19/2017 18:56
Surr: 4-Terphenyl-d14	130			22-172	%REC	1	10/19/2017 18:56
Surr: Nitrobenzene-d5	71.6			28-140	%REC	1	10/19/2017 18:56
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 10/24/17		Analyst: BG
1,1,1-Trichloroethane	U		11	38	µg/Kg-dry	1	10/26/2017 03:00
1,1,2,2-Tetrachloroethane	U		9.6	32	µg/Kg-dry	1	10/26/2017 03:00
1,1,2-Trichloroethane	U		12	40	µg/Kg-dry	1	10/26/2017 03:00
1,1-Dichloroethane	U		10	34	µg/Kg-dry	1	10/26/2017 03:00
1,1-Dichloroethene	U		11	36	µg/Kg-dry	1	10/26/2017 03:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-2 (1-2')
Collection Date: 10/17/2017 12:00 PM

Work Order: 17101184
Lab ID: 17101184-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		18	58	µg/Kg-dry	1	10/26/2017 03:00
1,2,4-Trichlorobenzene	U		29	98	µg/Kg-dry	1	10/26/2017 03:00
1,2,4-Trimethylbenzene	U		8.0	27	µg/Kg-dry	1	10/26/2017 03:00
1,2-Dibromo-3-chloropropane	U		16	54	µg/Kg-dry	1	10/26/2017 03:00
1,2-Dibromoethane	U		13	44	µg/Kg-dry	1	10/26/2017 03:00
1,2-Dichlorobenzene	U		12	39	µg/Kg-dry	1	10/26/2017 03:00
1,2-Dichloroethane	U		11	36	µg/Kg-dry	1	10/26/2017 03:00
1,2-Dichloropropane	U		11	37	µg/Kg-dry	1	10/26/2017 03:00
1,3,5-Trimethylbenzene	U		17	58	µg/Kg-dry	1	10/26/2017 03:00
1,3-Dichlorobenzene	U		13	43	µg/Kg-dry	1	10/26/2017 03:00
1,4-Dichlorobenzene	U		10	35	µg/Kg-dry	1	10/26/2017 03:00
2-Butanone	U		54	180	µg/Kg-dry	1	10/26/2017 03:00
2-Hexanone	U		26	88	µg/Kg-dry	1	10/26/2017 03:00
4-Methyl-2-pentanone	U		29	97	µg/Kg-dry	1	10/26/2017 03:00
Benzene	U		9.0	30	µg/Kg-dry	1	10/26/2017 03:00
Bromochloromethane	U		18	59	µg/Kg-dry	1	10/26/2017 03:00
Bromodichloromethane	U		11	36	µg/Kg-dry	1	10/26/2017 03:00
Bromoform	U		14	47	µg/Kg-dry	1	10/26/2017 03:00
Bromomethane	U		17	57	µg/Kg-dry	1	10/26/2017 03:00
Carbon disulfide	U		13	45	µg/Kg-dry	1	10/26/2017 03:00
Carbon tetrachloride	U		7.1	23	µg/Kg-dry	1	10/26/2017 03:00
Chlorobenzene	U		12	40	µg/Kg-dry	1	10/26/2017 03:00
Chloroethane	U		25	84	µg/Kg-dry	1	10/26/2017 03:00
Chloroform	U		13	45	µg/Kg-dry	1	10/26/2017 03:00
Chloromethane	U		16	54	µg/Kg-dry	1	10/26/2017 03:00
cis-1,2-Dichloroethene	U		11	38	µg/Kg-dry	1	10/26/2017 03:00
cis-1,3-Dichloropropene	U		15	51	µg/Kg-dry	1	10/26/2017 03:00
Cyclohexane	U		20	66	µg/Kg-dry	1	10/26/2017 03:00
Dibromochloromethane	U		9.1	30	µg/Kg-dry	1	10/26/2017 03:00
Dichlorodifluoromethane	U		18	59	µg/Kg-dry	1	10/26/2017 03:00
Ethylbenzene	U		9.3	31	µg/Kg-dry	1	10/26/2017 03:00
Isopropylbenzene	U		16	52	µg/Kg-dry	1	10/26/2017 03:00
m,p-Xylene	U		18	60	µg/Kg-dry	1	10/26/2017 03:00
Methyl tert-butyl ether	U		13	43	µg/Kg-dry	1	10/26/2017 03:00
Methylcyclohexane	U		17	57	µg/Kg-dry	1	10/26/2017 03:00
Methylene chloride	U		18	61	µg/Kg-dry	1	10/26/2017 03:00
Naphthalene	U		6.8	23	µg/Kg-dry	1	10/26/2017 03:00
o-Xylene	U		13	43	µg/Kg-dry	1	10/26/2017 03:00
Styrene	U		28	94	µg/Kg-dry	1	10/26/2017 03:00
Tetrachloroethene	U		20	65	µg/Kg-dry	1	10/26/2017 03:00

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-2 (1-2')
Collection Date: 10/17/2017 12:00 PM

Work Order: 17101184
Lab ID: 17101184-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Toluene	U		13	44	µg/Kg-dry	1	10/26/2017 03:00
trans-1,2-Dichloroethene	U		11	38	µg/Kg-dry	1	10/26/2017 03:00
trans-1,3-Dichloropropene	U		7.1	24	µg/Kg-dry	1	10/26/2017 03:00
Trichloroethene	U		11	35	µg/Kg-dry	1	10/26/2017 03:00
Trichlorofluoromethane	U		7.6	25	µg/Kg-dry	1	10/26/2017 03:00
Vinyl chloride	U		13	42	µg/Kg-dry	1	10/26/2017 03:00
Xylenes, Total	U		31	100	µg/Kg-dry	1	10/26/2017 03:00
Surr: 1,2-Dichloroethane-d4	101			70-130	%REC	1	10/26/2017 03:00
Surr: 4-Bromofluorobenzene	100			70-130	%REC	1	10/26/2017 03:00
Surr: Dibromofluoromethane	96.4			70-130	%REC	1	10/26/2017 03:00
Surr: Toluene-d8	92.3			70-130	%REC	1	10/26/2017 03:00
MOISTURE			Method: SW3550C				Analyst: MT
Moisture	14		0.025	0.050	% of sample	1	10/19/2017 15:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-2 (3.5-4.5')
Collection Date: 10/17/2017 12:10 PM

Work Order: 17101184
Lab ID: 17101184-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/27/17		Analyst: RSH
Mercury	0.017		0.0035	0.012	mg/Kg-dry	1	10/27/2017 15:15
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/23/17		Analyst: JF
Arsenic	3.1		0.059	0.20	mg/Kg-dry	1	10/23/2017 18:31
Barium	23		0.056	0.19	mg/Kg-dry	1	10/23/2017 18:31
Cadmium	U		0.0032	0.011	mg/Kg-dry	1	10/23/2017 18:31
Chromium	6.9		0.019	0.064	mg/Kg-dry	1	10/23/2017 18:31
Lead	5.3		0.0064	0.021	mg/Kg-dry	1	10/23/2017 18:31
Selenium	0.81		0.12	0.40	mg/Kg-dry	1	10/23/2017 18:31
Silver	0.0074	J	0.0032	0.011	mg/Kg-dry	1	10/23/2017 18:31
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 10/19/17		Analyst: RM
2-Chloronaphthalene	U		4.6	46	µg/Kg-dry	1	10/19/2017 17:32
2-Methylnaphthalene	U		7.5	46	µg/Kg-dry	1	10/19/2017 17:32
Acenaphthene	U		3.2	46	µg/Kg-dry	1	10/19/2017 17:32
Acenaphthylene	U		4.0	46	µg/Kg-dry	1	10/19/2017 17:32
Anthracene	U		1.7	46	µg/Kg-dry	1	10/19/2017 17:32
Benzo(a)anthracene	U		2.8	46	µg/Kg-dry	1	10/19/2017 17:32
Benzo(a)pyrene	U		1.1	46	µg/Kg-dry	1	10/19/2017 17:32
Benzo(b)fluoranthene	U		1.8	46	µg/Kg-dry	1	10/19/2017 17:32
Benzo(g,h,i)perylene	U		3.1	46	µg/Kg-dry	1	10/19/2017 17:32
Benzo(k)fluoranthene	U		2.4	46	µg/Kg-dry	1	10/19/2017 17:32
Chrysene	U		1.8	46	µg/Kg-dry	1	10/19/2017 17:32
Dibenzo(a,h)anthracene	U		1.5	46	µg/Kg-dry	1	10/19/2017 17:32
Fluoranthene	U		1.3	46	µg/Kg-dry	1	10/19/2017 17:32
Fluorene	U		1.5	46	µg/Kg-dry	1	10/19/2017 17:32
Indeno(1,2,3-cd)pyrene	U		1.4	46	µg/Kg-dry	1	10/19/2017 17:32
Naphthalene	U		8.6	46	µg/Kg-dry	1	10/19/2017 17:32
Phenanthrene	U		1.6	46	µg/Kg-dry	1	10/19/2017 17:32
Pyrene	U		1.7	46	µg/Kg-dry	1	10/19/2017 17:32
Surr: 2-Fluorobiphenyl	84.3			20-140	%REC	1	10/19/2017 17:32
Surr: 4-Terphenyl-d14	128			22-172	%REC	1	10/19/2017 17:32
Surr: Nitrobenzene-d5	76.0			28-140	%REC	1	10/19/2017 17:32
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 10/24/17		Analyst: BG
1,1,1-Trichloroethane	U		10	35	µg/Kg-dry	1	10/26/2017 03:24
1,1,2,2-Tetrachloroethane	U		8.8	29	µg/Kg-dry	1	10/26/2017 03:24
1,1,2-Trichloroethane	U		11	36	µg/Kg-dry	1	10/26/2017 03:24
1,1-Dichloroethane	U		9.3	31	µg/Kg-dry	1	10/26/2017 03:24
1,1-Dichloroethene	U		9.8	33	µg/Kg-dry	1	10/26/2017 03:24

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-2 (3.5-4.5')
Collection Date: 10/17/2017 12:10 PM

Work Order: 17101184
Lab ID: 17101184-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		16	53	µg/Kg-dry	1	10/26/2017 03:24
1,2,4-Trichlorobenzene	U		27	90	µg/Kg-dry	1	10/26/2017 03:24
1,2,4-Trimethylbenzene	U		7.3	24	µg/Kg-dry	1	10/26/2017 03:24
1,2-Dibromo-3-chloropropane	U		15	49	µg/Kg-dry	1	10/26/2017 03:24
1,2-Dibromoethane	U		12	41	µg/Kg-dry	1	10/26/2017 03:24
1,2-Dichlorobenzene	U		11	36	µg/Kg-dry	1	10/26/2017 03:24
1,2-Dichloroethane	U		9.9	33	µg/Kg-dry	1	10/26/2017 03:24
1,2-Dichloropropane	U		10	34	µg/Kg-dry	1	10/26/2017 03:24
1,3,5-Trimethylbenzene	U		16	53	µg/Kg-dry	1	10/26/2017 03:24
1,3-Dichlorobenzene	U		12	39	µg/Kg-dry	1	10/26/2017 03:24
1,4-Dichlorobenzene	U		9.5	32	µg/Kg-dry	1	10/26/2017 03:24
2-Butanone	U		49	160	µg/Kg-dry	1	10/26/2017 03:24
2-Hexanone	U		24	81	µg/Kg-dry	1	10/26/2017 03:24
4-Methyl-2-pentanone	U		27	89	µg/Kg-dry	1	10/26/2017 03:24
Benzene	U		8.2	27	µg/Kg-dry	1	10/26/2017 03:24
Bromochloromethane	U		16	54	µg/Kg-dry	1	10/26/2017 03:24
Bromodichloromethane	U		9.8	33	µg/Kg-dry	1	10/26/2017 03:24
Bromoform	U		13	43	µg/Kg-dry	1	10/26/2017 03:24
Bromomethane	U		16	53	µg/Kg-dry	1	10/26/2017 03:24
Carbon disulfide	U		12	41	µg/Kg-dry	1	10/26/2017 03:24
Carbon tetrachloride	U		6.5	22	µg/Kg-dry	1	10/26/2017 03:24
Chlorobenzene	U		11	36	µg/Kg-dry	1	10/26/2017 03:24
Chloroethane	U		23	77	µg/Kg-dry	1	10/26/2017 03:24
Chloroform	U		12	41	µg/Kg-dry	1	10/26/2017 03:24
Chloromethane	U		15	49	µg/Kg-dry	1	10/26/2017 03:24
cis-1,2-Dichloroethene	U		10	34	µg/Kg-dry	1	10/26/2017 03:24
cis-1,3-Dichloropropene	U		14	47	µg/Kg-dry	1	10/26/2017 03:24
Cyclohexane	U		18	61	µg/Kg-dry	1	10/26/2017 03:24
Dibromochloromethane	U		8.3	28	µg/Kg-dry	1	10/26/2017 03:24
Dichlorodifluoromethane	U		16	54	µg/Kg-dry	1	10/26/2017 03:24
Ethylbenzene	U		8.5	28	µg/Kg-dry	1	10/26/2017 03:24
Isopropylbenzene	U		14	48	µg/Kg-dry	1	10/26/2017 03:24
m,p-Xylene	U		16	55	µg/Kg-dry	1	10/26/2017 03:24
Methyl tert-butyl ether	U		12	39	µg/Kg-dry	1	10/26/2017 03:24
Methylcyclohexane	U		16	53	µg/Kg-dry	1	10/26/2017 03:24
Methylene chloride	U		17	56	µg/Kg-dry	1	10/26/2017 03:24
Naphthalene	U		6.2	21	µg/Kg-dry	1	10/26/2017 03:24
o-Xylene	U		12	39	µg/Kg-dry	1	10/26/2017 03:24
Styrene	U		26	86	µg/Kg-dry	1	10/26/2017 03:24
Tetrachloroethene	U		18	60	µg/Kg-dry	1	10/26/2017 03:24

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-2 (3.5-4.5')
Collection Date: 10/17/2017 12:10 PM

Work Order: 17101184
Lab ID: 17101184-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Toluene	U		12	40	µg/Kg-dry	1	10/26/2017 03:24
trans-1,2-Dichloroethene	U		10	34	µg/Kg-dry	1	10/26/2017 03:24
trans-1,3-Dichloropropene	U		6.5	22	µg/Kg-dry	1	10/26/2017 03:24
Trichloroethene	U		9.7	32	µg/Kg-dry	1	10/26/2017 03:24
Trichlorofluoromethane	U		7.0	23	µg/Kg-dry	1	10/26/2017 03:24
Vinyl chloride	U		12	39	µg/Kg-dry	1	10/26/2017 03:24
Xylenes, Total	U		28	94	µg/Kg-dry	1	10/26/2017 03:24
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	10/26/2017 03:24
Surr: 4-Bromofluorobenzene	98.2			70-130	%REC	1	10/26/2017 03:24
Surr: Dibromofluoromethane	97.2			70-130	%REC	1	10/26/2017 03:24
Surr: Toluene-d8	93.9			70-130	%REC	1	10/26/2017 03:24
MOISTURE			Method: SW3550C				Analyst: MT
Moisture	9.7		0.025	0.050	% of sample	1	10/19/2017 15:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-3 (3-4')
Collection Date: 10/17/2017 12:45 PM

Work Order: 17101184
Lab ID: 17101184-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/27/17		Analyst: RSH
Mercury	0.027		0.0032	0.011	mg/Kg-dry	1	10/27/2017 15:17
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/23/17		Analyst: JF
Arsenic	2.5		0.069	0.23	mg/Kg-dry	1	10/23/2017 18:33
Barium	56		0.065	0.22	mg/Kg-dry	1	10/23/2017 18:33
Cadmium	0.025		0.0037	0.013	mg/Kg-dry	1	10/23/2017 18:33
Chromium	10		0.022	0.075	mg/Kg-dry	1	10/23/2017 18:33
Lead	7.7		0.0075	0.024	mg/Kg-dry	1	10/23/2017 18:33
Selenium	1.3		0.14	0.47	mg/Kg-dry	1	10/23/2017 18:33
Silver	0.020		0.0037	0.013	mg/Kg-dry	1	10/23/2017 18:33
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 10/19/17		Analyst: RM
2-Chloronaphthalene	U		4.8	48	µg/Kg-dry	1	10/19/2017 19:11
2-Methylnaphthalene	U		7.9	48	µg/Kg-dry	1	10/19/2017 19:11
Acenaphthene	U		3.4	48	µg/Kg-dry	1	10/19/2017 19:11
Acenaphthylene	U		4.3	48	µg/Kg-dry	1	10/19/2017 19:11
Anthracene	U		1.8	48	µg/Kg-dry	1	10/19/2017 19:11
Benzo(a)anthracene	81		3.0	48	µg/Kg-dry	1	10/19/2017 19:11
Benzo(a)pyrene	74		1.2	48	µg/Kg-dry	1	10/19/2017 19:11
Benzo(b)fluoranthene	100		1.8	48	µg/Kg-dry	1	10/19/2017 19:11
Benzo(g,h,i)perylene	88		3.2	48	µg/Kg-dry	1	10/19/2017 19:11
Benzo(k)fluoranthene	100		2.5	48	µg/Kg-dry	1	10/19/2017 19:11
Chrysene	120		1.8	48	µg/Kg-dry	1	10/19/2017 19:11
Dibenzo(a,h)anthracene	55		1.6	48	µg/Kg-dry	1	10/19/2017 19:11
Fluoranthene	170		1.4	48	µg/Kg-dry	1	10/19/2017 19:11
Fluorene	U		1.6	48	µg/Kg-dry	1	10/19/2017 19:11
Indeno(1,2,3-cd)pyrene	65		1.5	48	µg/Kg-dry	1	10/19/2017 19:11
Naphthalene	U		9.1	48	µg/Kg-dry	1	10/19/2017 19:11
Phenanthrene	66		1.7	48	µg/Kg-dry	1	10/19/2017 19:11
Pyrene	140		1.8	48	µg/Kg-dry	1	10/19/2017 19:11
Surr: 2-Fluorobiphenyl	95.0			20-140	%REC	1	10/19/2017 19:11
Surr: 4-Terphenyl-d14	105			22-172	%REC	1	10/19/2017 19:11
Surr: Nitrobenzene-d5	73.9			28-140	%REC	1	10/19/2017 19:11
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 10/24/17		Analyst: BG
1,1,1-Trichloroethane	U		12	39	µg/Kg-dry	1	10/26/2017 03:48
1,1,2,2-Tetrachloroethane	U		9.8	33	µg/Kg-dry	1	10/26/2017 03:48
1,1,2-Trichloroethane	U		12	40	µg/Kg-dry	1	10/26/2017 03:48
1,1-Dichloroethane	U		10	34	µg/Kg-dry	1	10/26/2017 03:48
1,1-Dichloroethene	U		11	36	µg/Kg-dry	1	10/26/2017 03:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-3 (3-4')
Collection Date: 10/17/2017 12:45 PM

Work Order: 17101184
Lab ID: 17101184-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		18	60	µg/Kg-dry	1	10/26/2017 03:48
1,2,4-Trichlorobenzene	U		30	100	µg/Kg-dry	1	10/26/2017 03:48
1,2,4-Trimethylbenzene	U		8.1	27	µg/Kg-dry	1	10/26/2017 03:48
1,2-Dibromo-3-chloropropane	U		16	55	µg/Kg-dry	1	10/26/2017 03:48
1,2-Dibromoethane	U		14	45	µg/Kg-dry	1	10/26/2017 03:48
1,2-Dichlorobenzene	U		12	40	µg/Kg-dry	1	10/26/2017 03:48
1,2-Dichloroethane	U		11	37	µg/Kg-dry	1	10/26/2017 03:48
1,2-Dichloropropane	U		11	37	µg/Kg-dry	1	10/26/2017 03:48
1,3,5-Trimethylbenzene	U		18	59	µg/Kg-dry	1	10/26/2017 03:48
1,3-Dichlorobenzene	U		13	43	µg/Kg-dry	1	10/26/2017 03:48
1,4-Dichlorobenzene	U		11	35	µg/Kg-dry	1	10/26/2017 03:48
2-Butanone	U		55	180	µg/Kg-dry	1	10/26/2017 03:48
2-Hexanone	U		27	90	µg/Kg-dry	1	10/26/2017 03:48
4-Methyl-2-pentanone	U		30	99	µg/Kg-dry	1	10/26/2017 03:48
Benzene	U		9.2	31	µg/Kg-dry	1	10/26/2017 03:48
Bromochloromethane	U		18	60	µg/Kg-dry	1	10/26/2017 03:48
Bromodichloromethane	U		11	36	µg/Kg-dry	1	10/26/2017 03:48
Bromoform	U		14	48	µg/Kg-dry	1	10/26/2017 03:48
Bromomethane	U		18	59	µg/Kg-dry	1	10/26/2017 03:48
Carbon disulfide	U		14	46	µg/Kg-dry	1	10/26/2017 03:48
Carbon tetrachloride	U		7.2	24	µg/Kg-dry	1	10/26/2017 03:48
Chlorobenzene	U		12	41	µg/Kg-dry	1	10/26/2017 03:48
Chloroethane	U		26	86	µg/Kg-dry	1	10/26/2017 03:48
Chloroform	U		14	46	µg/Kg-dry	1	10/26/2017 03:48
Chloromethane	U		16	55	µg/Kg-dry	1	10/26/2017 03:48
cis-1,2-Dichloroethene	U		11	38	µg/Kg-dry	1	10/26/2017 03:48
cis-1,3-Dichloropropene	U		16	52	µg/Kg-dry	1	10/26/2017 03:48
Cyclohexane	U		20	68	µg/Kg-dry	1	10/26/2017 03:48
Dibromochloromethane	U		9.3	31	µg/Kg-dry	1	10/26/2017 03:48
Dichlorodifluoromethane	U		18	60	µg/Kg-dry	1	10/26/2017 03:48
Ethylbenzene	U		9.5	32	µg/Kg-dry	1	10/26/2017 03:48
Isopropylbenzene	U		16	53	µg/Kg-dry	1	10/26/2017 03:48
m,p-Xylene	U		18	61	µg/Kg-dry	1	10/26/2017 03:48
Methyl tert-butyl ether	U		13	44	µg/Kg-dry	1	10/26/2017 03:48
Methylcyclohexane	U		18	59	µg/Kg-dry	1	10/26/2017 03:48
Methylene chloride	U		19	62	µg/Kg-dry	1	10/26/2017 03:48
Naphthalene	U		6.9	23	µg/Kg-dry	1	10/26/2017 03:48
o-Xylene	U		13	44	µg/Kg-dry	1	10/26/2017 03:48
Styrene	U		29	96	µg/Kg-dry	1	10/26/2017 03:48
Tetrachloroethene	U		20	67	µg/Kg-dry	1	10/26/2017 03:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-3 (3-4')
Collection Date: 10/17/2017 12:45 PM

Work Order: 17101184
Lab ID: 17101184-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Toluene	U		13	45	µg/Kg-dry	1	10/26/2017 03:48
trans-1,2-Dichloroethene	U		11	38	µg/Kg-dry	1	10/26/2017 03:48
trans-1,3-Dichloropropene	U		7.3	24	µg/Kg-dry	1	10/26/2017 03:48
Trichloroethene	U		11	36	µg/Kg-dry	1	10/26/2017 03:48
Trichlorofluoromethane	U		7.8	26	µg/Kg-dry	1	10/26/2017 03:48
Vinyl chloride	U		13	43	µg/Kg-dry	1	10/26/2017 03:48
Xylenes, Total	U		31	100	µg/Kg-dry	1	10/26/2017 03:48
Surr: 1,2-Dichloroethane-d4	101			70-130	%REC	1	10/26/2017 03:48
Surr: 4-Bromofluorobenzene	101			70-130	%REC	1	10/26/2017 03:48
Surr: Dibromofluoromethane	95.2			70-130	%REC	1	10/26/2017 03:48
Surr: Toluene-d8	93.3			70-130	%REC	1	10/26/2017 03:48
MOISTURE			Method: SW3550C				Analyst: MT
Moisture	15		0.025	0.050	% of sample	1	10/19/2017 15:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-3 (8-9")
Collection Date: 10/17/2017 12:55 PM

Work Order: 17101184
Lab ID: 17101184-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/27/17		Analyst: RSH
Mercury	0.015		0.0030	0.010	mg/Kg-dry	1	10/27/2017 15:20
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 10/23/17		Analyst: JF
Arsenic	2.4		0.056	0.19	mg/Kg-dry	1	10/23/2017 18:34
Barium	25		0.053	0.18	mg/Kg-dry	1	10/23/2017 18:34
Cadmium	0.11		0.0030	0.011	mg/Kg-dry	1	10/23/2017 18:34
Chromium	6.3		0.018	0.060	mg/Kg-dry	1	10/23/2017 18:34
Lead	6.2		0.0060	0.020	mg/Kg-dry	1	10/23/2017 18:34
Selenium	0.96		0.11	0.38	mg/Kg-dry	1	10/23/2017 18:34
Silver	0.018		0.0030	0.011	mg/Kg-dry	1	10/23/2017 18:34
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 10/19/17		Analyst: RM
2-Chloronaphthalene	U		4.7	47	µg/Kg-dry	1	10/19/2017 19:25
2-Methylnaphthalene	U		7.7	47	µg/Kg-dry	1	10/19/2017 19:25
Acenaphthene	U		3.3	47	µg/Kg-dry	1	10/19/2017 19:25
Acenaphthylene	U		4.2	47	µg/Kg-dry	1	10/19/2017 19:25
Anthracene	U		1.7	47	µg/Kg-dry	1	10/19/2017 19:25
Benzo(a)anthracene	U		2.9	47	µg/Kg-dry	1	10/19/2017 19:25
Benzo(a)pyrene	U		1.2	47	µg/Kg-dry	1	10/19/2017 19:25
Benzo(b)fluoranthene	U		1.8	47	µg/Kg-dry	1	10/19/2017 19:25
Benzo(g,h,i)perylene	U		3.2	47	µg/Kg-dry	1	10/19/2017 19:25
Benzo(k)fluoranthene	U		2.4	47	µg/Kg-dry	1	10/19/2017 19:25
Chrysene	U		1.8	47	µg/Kg-dry	1	10/19/2017 19:25
Dibenzo(a,h)anthracene	U		1.5	47	µg/Kg-dry	1	10/19/2017 19:25
Fluoranthene	U		1.4	47	µg/Kg-dry	1	10/19/2017 19:25
Fluorene	U		1.5	47	µg/Kg-dry	1	10/19/2017 19:25
Indeno(1,2,3-cd)pyrene	U		1.4	47	µg/Kg-dry	1	10/19/2017 19:25
Naphthalene	U		8.9	47	µg/Kg-dry	1	10/19/2017 19:25
Phenanthrene	U		1.6	47	µg/Kg-dry	1	10/19/2017 19:25
Pyrene	U		1.7	47	µg/Kg-dry	1	10/19/2017 19:25
Surr: 2-Fluorobiphenyl	89.9			20-140	%REC	1	10/19/2017 19:25
Surr: 4-Terphenyl-d14	94.3			22-172	%REC	1	10/19/2017 19:25
Surr: Nitrobenzene-d5	62.9			28-140	%REC	1	10/19/2017 19:25
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B		Prep: SW5035 / 10/24/17		Analyst: BG
1,1,1-Trichloroethane	U		11	38	µg/Kg-dry	1	10/26/2017 04:13
1,1,2,2-Tetrachloroethane	U		9.6	32	µg/Kg-dry	1	10/26/2017 04:13
1,1,2-Trichloroethane	U		12	40	µg/Kg-dry	1	10/26/2017 04:13
1,1-Dichloroethane	U		10	34	µg/Kg-dry	1	10/26/2017 04:13
1,1-Dichloroethene	U		11	36	µg/Kg-dry	1	10/26/2017 04:13

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-3 (8-9')
Collection Date: 10/17/2017 12:55 PM

Work Order: 17101184
Lab ID: 17101184-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		18	58	µg/Kg-dry	1	10/26/2017 04:13
1,2,4-Trichlorobenzene	U		29	98	µg/Kg-dry	1	10/26/2017 04:13
1,2,4-Trimethylbenzene	U		8.0	27	µg/Kg-dry	1	10/26/2017 04:13
1,2-Dibromo-3-chloropropane	U		16	54	µg/Kg-dry	1	10/26/2017 04:13
1,2-Dibromoethane	U		13	44	µg/Kg-dry	1	10/26/2017 04:13
1,2-Dichlorobenzene	U		12	39	µg/Kg-dry	1	10/26/2017 04:13
1,2-Dichloroethane	U		11	36	µg/Kg-dry	1	10/26/2017 04:13
1,2-Dichloropropane	U		11	37	µg/Kg-dry	1	10/26/2017 04:13
1,3,5-Trimethylbenzene	U		17	58	µg/Kg-dry	1	10/26/2017 04:13
1,3-Dichlorobenzene	U		13	43	µg/Kg-dry	1	10/26/2017 04:13
1,4-Dichlorobenzene	U		10	35	µg/Kg-dry	1	10/26/2017 04:13
2-Butanone	U		54	180	µg/Kg-dry	1	10/26/2017 04:13
2-Hexanone	U		26	88	µg/Kg-dry	1	10/26/2017 04:13
4-Methyl-2-pentanone	U		29	97	µg/Kg-dry	1	10/26/2017 04:13
Benzene	U		9.0	30	µg/Kg-dry	1	10/26/2017 04:13
Bromochloromethane	U		18	59	µg/Kg-dry	1	10/26/2017 04:13
Bromodichloromethane	U		11	36	µg/Kg-dry	1	10/26/2017 04:13
Bromoform	U		14	47	µg/Kg-dry	1	10/26/2017 04:13
Bromomethane	U		17	57	µg/Kg-dry	1	10/26/2017 04:13
Carbon disulfide	U		13	45	µg/Kg-dry	1	10/26/2017 04:13
Carbon tetrachloride	U		7.1	23	µg/Kg-dry	1	10/26/2017 04:13
Chlorobenzene	U		12	40	µg/Kg-dry	1	10/26/2017 04:13
Chloroethane	U		25	84	µg/Kg-dry	1	10/26/2017 04:13
Chloroform	U		13	45	µg/Kg-dry	1	10/26/2017 04:13
Chloromethane	U		16	54	µg/Kg-dry	1	10/26/2017 04:13
cis-1,2-Dichloroethene	U		11	38	µg/Kg-dry	1	10/26/2017 04:13
cis-1,3-Dichloropropene	U		15	51	µg/Kg-dry	1	10/26/2017 04:13
Cyclohexane	U		20	66	µg/Kg-dry	1	10/26/2017 04:13
Dibromochloromethane	U		9.1	30	µg/Kg-dry	1	10/26/2017 04:13
Dichlorodifluoromethane	U		18	59	µg/Kg-dry	1	10/26/2017 04:13
Ethylbenzene	U		9.3	31	µg/Kg-dry	1	10/26/2017 04:13
Isopropylbenzene	U		16	52	µg/Kg-dry	1	10/26/2017 04:13
m,p-Xylene	U		18	60	µg/Kg-dry	1	10/26/2017 04:13
Methyl tert-butyl ether	U		13	43	µg/Kg-dry	1	10/26/2017 04:13
Methylcyclohexane	U		17	57	µg/Kg-dry	1	10/26/2017 04:13
Methylene chloride	U		18	61	µg/Kg-dry	1	10/26/2017 04:13
Naphthalene	U		6.8	23	µg/Kg-dry	1	10/26/2017 04:13
o-Xylene	U		13	43	µg/Kg-dry	1	10/26/2017 04:13
Styrene	U		28	94	µg/Kg-dry	1	10/26/2017 04:13
Tetrachloroethene	U		20	65	µg/Kg-dry	1	10/26/2017 04:13

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: WS-B-3 (8-9')
Collection Date: 10/17/2017 12:55 PM

Work Order: 17101184
Lab ID: 17101184-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Toluene	U		13	44	µg/Kg-dry	1	10/26/2017 04:13
trans-1,2-Dichloroethene	U		11	38	µg/Kg-dry	1	10/26/2017 04:13
trans-1,3-Dichloropropene	U		7.1	24	µg/Kg-dry	1	10/26/2017 04:13
Trichloroethene	U		11	35	µg/Kg-dry	1	10/26/2017 04:13
Trichlorofluoromethane	U		7.6	25	µg/Kg-dry	1	10/26/2017 04:13
Vinyl chloride	U		13	42	µg/Kg-dry	1	10/26/2017 04:13
Xylenes, Total	U		31	100	µg/Kg-dry	1	10/26/2017 04:13
Surr: 1,2-Dichloroethane-d4	101			70-130	%REC	1	10/26/2017 04:13
Surr: 4-Bromofluorobenzene	97.6			70-130	%REC	1	10/26/2017 04:13
Surr: Dibromofluoromethane	96.6			70-130	%REC	1	10/26/2017 04:13
Surr: Toluene-d8	93.6			70-130	%REC	1	10/26/2017 04:13
MOISTURE			Method: SW3550C				Analyst: MT
Moisture	14		0.025	0.050	% of sample	1	10/19/2017 15:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: Trip Blank
Collection Date: 10/17/2017

Work Order: 17101184
Lab ID: 17101184-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/24/17		Analyst: BG	
1,1,1-Trichloroethane	U		8.6	28	µg/Kg-dry	1	10/26/2017 04:37
1,1,2,2-Tetrachloroethane	U		7.2	24	µg/Kg-dry	1	10/26/2017 04:37
1,1,2-Trichloroethane	U		9.0	30	µg/Kg-dry	1	10/26/2017 04:37
1,1-Dichloroethane	U		7.6	25	µg/Kg-dry	1	10/26/2017 04:37
1,1-Dichloroethene	U		8.0	27	µg/Kg-dry	1	10/26/2017 04:37
1,2,3-Trichlorobenzene	U		13	44	µg/Kg-dry	1	10/26/2017 04:37
1,2,4-Trichlorobenzene	U		22	74	µg/Kg-dry	1	10/26/2017 04:37
1,2,4-Trimethylbenzene	U		6.0	20	µg/Kg-dry	1	10/26/2017 04:37
1,2-Dibromo-3-chloropropane	U		12	41	µg/Kg-dry	1	10/26/2017 04:37
1,2-Dibromoethane	U		10	33	µg/Kg-dry	1	10/26/2017 04:37
1,2-Dichlorobenzene	U		8.9	30	µg/Kg-dry	1	10/26/2017 04:37
1,2-Dichloroethane	U		8.2	27	µg/Kg-dry	1	10/26/2017 04:37
1,2-Dichloropropane	U		8.3	28	µg/Kg-dry	1	10/26/2017 04:37
1,3,5-Trimethylbenzene	U		13	44	µg/Kg-dry	1	10/26/2017 04:37
1,3-Dichlorobenzene	U		9.6	32	µg/Kg-dry	1	10/26/2017 04:37
1,4-Dichlorobenzene	U		7.8	26	µg/Kg-dry	1	10/26/2017 04:37
2-Butanone	U		40	130	µg/Kg-dry	1	10/26/2017 04:37
2-Hexanone	U		20	66	µg/Kg-dry	1	10/26/2017 04:37
4-Methyl-2-pentanone	U		22	73	µg/Kg-dry	1	10/26/2017 04:37
Benzene	U		6.8	23	µg/Kg-dry	1	10/26/2017 04:37
Bromochloromethane	U		13	45	µg/Kg-dry	1	10/26/2017 04:37
Bromodichloromethane	U		8.0	27	µg/Kg-dry	1	10/26/2017 04:37
Bromoform	U		11	35	µg/Kg-dry	1	10/26/2017 04:37
Bromomethane	U		13	43	µg/Kg-dry	1	10/26/2017 04:37
Carbon disulfide	U		10	34	µg/Kg-dry	1	10/26/2017 04:37
Carbon tetrachloride	U		5.3	18	µg/Kg-dry	1	10/26/2017 04:37
Chlorobenzene	U		9.0	30	µg/Kg-dry	1	10/26/2017 04:37
Chloroethane	U		19	64	µg/Kg-dry	1	10/26/2017 04:37
Chloroform	U		10	34	µg/Kg-dry	1	10/26/2017 04:37
Chloromethane	U		12	40	µg/Kg-dry	1	10/26/2017 04:37
cis-1,2-Dichloroethene	U		8.5	28	µg/Kg-dry	1	10/26/2017 04:37
cis-1,3-Dichloropropene	U		11	38	µg/Kg-dry	1	10/26/2017 04:37
Cyclohexane	U		15	50	µg/Kg-dry	1	10/26/2017 04:37
Dibromochloromethane	U		6.8	23	µg/Kg-dry	1	10/26/2017 04:37
Dichlorodifluoromethane	U		13	44	µg/Kg-dry	1	10/26/2017 04:37
Ethylbenzene	U		7.0	23	µg/Kg-dry	1	10/26/2017 04:37
Isopropylbenzene	U		12	39	µg/Kg-dry	1	10/26/2017 04:37
m,p-Xylene	U		13	45	µg/Kg-dry	1	10/26/2017 04:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA**Date:** 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.17 (21-41365B)
Sample ID: Trip Blank
Collection Date: 10/17/2017

Work Order: 17101184
Lab ID: 17101184-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		9.8	32	µg/Kg-dry	1	10/26/2017 04:37
Methylcyclohexane	U		13	43	µg/Kg-dry	1	10/26/2017 04:37
Methylene chloride	U		14	46	µg/Kg-dry	1	10/26/2017 04:37
Naphthalene	U		5.1	17	µg/Kg-dry	1	10/26/2017 04:37
o-Xylene	U		9.7	32	µg/Kg-dry	1	10/26/2017 04:37
Styrene	U		21	71	µg/Kg-dry	1	10/26/2017 04:37
Tetrachloroethene	U		15	49	µg/Kg-dry	1	10/26/2017 04:37
Toluene	U		9.9	33	µg/Kg-dry	1	10/26/2017 04:37
trans-1,2-Dichloroethene	U		8.5	28	µg/Kg-dry	1	10/26/2017 04:37
trans-1,3-Dichloropropene	U		5.4	18	µg/Kg-dry	1	10/26/2017 04:37
Trichloroethene	U		8.0	27	µg/Kg-dry	1	10/26/2017 04:37
Trichlorofluoromethane	U		5.8	19	µg/Kg-dry	1	10/26/2017 04:37
Vinyl chloride	U		9.5	32	µg/Kg-dry	1	10/26/2017 04:37
Xylenes, Total	U		23	77	µg/Kg-dry	1	10/26/2017 04:37
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	10/26/2017 04:37
Surr: 4-Bromofluorobenzene	96.2			70-130	%REC	1	10/26/2017 04:37
Surr: Dibromofluoromethane	95.0			70-130	%REC	1	10/26/2017 04:37
Surr: Toluene-d8	92.9			70-130	%REC	1	10/26/2017 04:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **109697** Instrument ID **HG1** Method: **SW7471B**

MBLK		Sample ID: MBLK-109697-109697				Units: mg/Kg		Analysis Date: 10/27/2017 02:29 PM		
Client ID:		Run ID: HG1_171027A				SeqNo: 4726306		Prep Date: 10/27/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

LCS		Sample ID: LCS-109697-109697				Units: mg/Kg		Analysis Date: 10/27/2017 02:31 PM		
Client ID:		Run ID: HG1_171027A				SeqNo: 4726307		Prep Date: 10/27/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.18 0.020 0.1665 0 108 80-120 0

MS		Sample ID: 17101527-01AMS				Units: mg/Kg		Analysis Date: 10/27/2017 02:36 PM		
Client ID:		Run ID: HG1_171027A				SeqNo: 4726309		Prep Date: 10/27/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1561 0.017 0.138 0.03439 88.2 75-125 0

MSD		Sample ID: 17101527-01AMSD				Units: mg/Kg		Analysis Date: 10/27/2017 02:39 PM		
Client ID:		Run ID: HG1_171027A				SeqNo: 4726310		Prep Date: 10/27/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1623 0.016 0.1363 0.03439 93.9 75-125 0.1561 3.94 35

The following samples were analyzed in this batch:

17101184-01B	17101184-02B	17101184-03B
17101184-04B	17101184-05B	17101184-06B

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **109417** Instrument ID **ICPMS3** Method: **SW6020A**

MBLK		Sample ID: MBLK-109417-109417				Units: mg/Kg		Analysis Date: 10/23/2017 06:13 PM		
Client ID:		Run ID: ICPMS3_171023A				SeqNo: 4716736		Prep Date: 10/23/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.10								
Chromium	0.0235	0.25								J
Lead	U	0.25								
Selenium	U	0.25								
Silver	U	0.25								

LCS		Sample ID: LCS-109417-109417				Units: mg/Kg		Analysis Date: 10/23/2017 06:15 PM		
Client ID:		Run ID: ICPMS3_171023A				SeqNo: 4716737		Prep Date: 10/23/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.908	0.25	5	0	98.2	80-120	0			
Barium	4.97	0.25	5	0	99.4	80-120	0			
Cadmium	4.481	0.10	5	0	89.6	80-120	0			
Chromium	5.074	0.25	5	0	101	80-120	0			
Lead	5.024	0.25	5	0	100	80-120	0			
Selenium	4.918	0.25	5	0	98.4	80-120	0			
Silver	4.667	0.25	5	0	93.3	80-120	0			

MS		Sample ID: 17101419-02AMS				Units: mg/Kg		Analysis Date: 10/23/2017 07:20 PM		
Client ID:		Run ID: ICPMS3_171023A				SeqNo: 4716777		Prep Date: 10/23/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.55	0.34	6.849	5.012	95.5	75-125	0			
Barium	16.95	0.34	6.849	9.698	106	75-125	0			
Cadmium	6.155	0.14	6.849	-0.0003429	89.9	75-125	0			
Chromium	9.973	0.34	6.849	2.727	106	75-125	0			
Lead	9.042	0.34	6.849	2.719	92.3	75-125	0			
Selenium	7.564	0.34	6.849	1.248	92.2	75-125	0			
Silver	6.397	0.34	6.849	0.02044	93.1	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **109417** Instrument ID **ICPMS3** Method: **SW6020A**

MSD		Sample ID: 17101419-02AMSD				Units: mg/Kg		Analysis Date: 10/23/2017 07:21 PM		
Client ID:		Run ID: ICPMS3_171023A				SeqNo: 4716778		Prep Date: 10/23/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.63	0.34	6.849	5.012	96.7	75-125	11.55	0.682	20	
Barium	22.97	0.34	6.849	9.698	194	75-125	16.95	30.1	20	SR
Cadmium	6.143	0.14	6.849	-0.0003429	89.7	75-125	6.155	0.189	20	
Chromium	10.32	0.34	6.849	2.727	111	75-125	9.973	3.43	20	
Lead	10.18	0.34	6.849	2.719	109	75-125	9.042	11.9	20	
Selenium	7.757	0.34	6.849	1.248	95	75-125	7.564	2.52	20	
Silver	6.462	0.34	6.849	0.02044	94	75-125	6.397	1.01	20	

The following samples were analyzed in this batch:

17101184-01B	17101184-02B	17101184-03B
17101184-04B	17101184-05B	17101184-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **109262** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK		Sample ID: SBLKS1-109262-109262				Units: µg/Kg		Analysis Date: 10/19/2017 04:36 PM		
Client ID:		Run ID: SVMS6_171019A				SeqNo: 4712325		Prep Date: 10/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	U	42								
2-Methylnaphthalene	U	42								
Acenaphthene	U	42								
Acenaphthylene	U	42								
Anthracene	U	42								
Benzo(a)anthracene	U	42								
Benzo(a)pyrene	U	42								
Benzo(b)fluoranthene	U	42								
Benzo(g,h,i)perylene	U	42								
Benzo(k)fluoranthene	U	42								
Chrysene	U	42								
Dibenzo(a,h)anthracene	U	42								
Fluoranthene	U	42								
Fluorene	U	42								
Indeno(1,2,3-cd)pyrene	U	42								
Naphthalene	U	42								
Phenanthrene	U	42								
Pyrene	U	42								
<i>Surr: 2-Fluorobiphenyl</i>	<i>3351</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>101</i>	<i>20-140</i>	<i>0</i>			
<i>Surr: 4-Terphenyl-d14</i>	<i>3690</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>111</i>	<i>22-172</i>	<i>0</i>			
<i>Surr: Nitrobenzene-d5</i>	<i>2516</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>75.5</i>	<i>28-140</i>	<i>0</i>			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **109262** Instrument ID **SVMS6** Method: **SW846 8270D**

LCS		Sample ID: SLCSS1-109262-109262				Units: µg/Kg		Analysis Date: 10/19/2017 04:50 PM		
Client ID:		Run ID: SVMS6_171019A				SeqNo: 4712326		Prep Date: 10/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	1183	42	1333	0	88.8	40-140	0			
2-Methylnaphthalene	1225	42	1333	0	91.9	40-140	0			
Acenaphthene	1173	42	1333	0	88	40-140	0			
Acenaphthylene	1214	42	1333	0	91.1	40-140	0			
Anthracene	1215	42	1333	0	91.2	40-140	0			
Benzo(a)anthracene	1291	42	1333	0	96.8	40-140	0			
Benzo(a)pyrene	1198	42	1333	0	89.9	40-140	0			
Benzo(b)fluoranthene	1143	42	1333	0	85.7	40-140	0			
Benzo(g,h,i)perylene	1135	42	1333	0	85.1	40-140	0			
Benzo(k)fluoranthene	1126	42	1333	0	84.4	40-140	0			
Chrysene	1148	42	1333	0	86.1	40-140	0			
Dibenzo(a,h)anthracene	1343	42	1333	0	101	40-140	0			
Fluoranthene	997.1	42	1333	0	74.8	40-140	0			
Fluorene	1165	42	1333	0	87.4	40-140	0			
Indeno(1,2,3-cd)pyrene	1331	42	1333	0	99.9	40-140	0			
Naphthalene	1184	42	1333	0	88.8	40-140	0			
Phenanthrene	1189	42	1333	0	89.2	40-140	0			
Pyrene	1019	42	1333	0	76.4	40-140	0			
<i>Surr: 2-Fluorobiphenyl</i>	<i>2931</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>87.9</i>	<i>20-140</i>	<i>0</i>			
<i>Surr: 4-Terphenyl-d14</i>	<i>3527</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>106</i>	<i>22-172</i>	<i>0</i>			
<i>Surr: Nitrobenzene-d5</i>	<i>2429</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>72.9</i>	<i>28-140</i>	<i>0</i>			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **109262** Instrument ID **SVMS6** Method: **SW846 8270D**

MS				Sample ID: 17101184-04B MS			Units: µg/Kg		Analysis Date: 10/19/2017 05:04 PM	
Client ID: WS-B-2 (3.5-4.5')				Run ID: SVMS6_171019A			SeqNo: 4712327		Prep Date: 10/19/2017	
							DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	1126	41	1323	0	85.1	40-140	0			
2-Methylnaphthalene	1387	41	1323	0	105	40-140	0			
Acenaphthene	1207	41	1323	0	91.2	40-140	0			
Acenaphthylene	1238	41	1323	0	93.5	40-140	0			
Anthracene	1276	41	1323	0	96.4	40-140	0			
Benzo(a)anthracene	1266	41	1323	0	95.7	40-140	0			
Benzo(a)pyrene	1341	41	1323	0	101	40-140	0			
Benzo(b)fluoranthene	1042	41	1323	0	78.7	40-140	0			
Benzo(g,h,i)perylene	1340	41	1323	0	101	40-140	0			
Benzo(k)fluoranthene	1236	41	1323	0	93.4	40-140	0			
Chrysene	1153	41	1323	0	87.1	40-140	0			
Dibenzo(a,h)anthracene	1446	41	1323	0	109	40-140	0			
Fluoranthene	1186	41	1323	0	89.6	40-140	0			
Fluorene	1167	41	1323	0	88.2	40-140	0			
Indeno(1,2,3-cd)pyrene	1415	41	1323	0	107	40-140	0			
Naphthalene	1187	41	1323	0	89.7	40-140	0			
Phenanthrene	1190	41	1323	0	89.9	40-140	0			
Pyrene	954.5	41	1323	0	72.1	40-140	0			
Surr: 2-Fluorobiphenyl	2794	0	3309	0	84.4	20-140	0			
Surr: 4-Terphenyl-d14	3432	0	3309	0	104	22-172	0			
Surr: Nitrobenzene-d5	2390	0	3309	0	72.2	28-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **109262** Instrument ID **SVMS6** Method: **SW846 8270D**

MSD				Sample ID: 17101184-04B MSD			Units: µg/Kg		Analysis Date: 10/19/2017 05:18 PM	
Client ID: WS-B-2 (3.5-4.5')				Run ID: SVMS6_171019A			SeqNo: 4712328		Prep Date: 10/19/2017	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	1157	41	1301	0	88.9	40-140	1126	2.64	30	
2-Methylnaphthalene	1301	41	1301	0	100	40-140	1387	6.41	30	
Acenaphthene	1238	41	1301	0	95.1	40-140	1207	2.49	30	
Acenaphthylene	1226	41	1301	0	94.2	40-140	1238	0.976	30	
Anthracene	1238	41	1301	0	95.1	40-140	1276	3.01	30	
Benzo(a)anthracene	1318	41	1301	0	101	40-140	1266	3.97	30	
Benzo(a)pyrene	1337	41	1301	0	103	40-140	1341	0.316	30	
Benzo(b)fluoranthene	1113	41	1301	0	85.5	40-140	1042	6.57	30	
Benzo(g,h,i)perylene	1350	41	1301	0	104	40-140	1340	0.782	30	
Benzo(k)fluoranthene	1293	41	1301	0	99.4	40-140	1236	4.54	30	
Chrysene	1188	41	1301	0	91.3	40-140	1153	3.02	30	
Dibenzo(a,h)anthracene	1284	41	1301	0	98.7	40-140	1446	11.9	30	
Fluoranthene	1033	41	1301	0	79.4	40-140	1186	13.8	30	
Fluorene	1364	41	1301	0	105	40-140	1167	15.5	30	
Indeno(1,2,3-cd)pyrene	1396	41	1301	0	107	40-140	1415	1.33	30	
Naphthalene	1201	41	1301	0	92.3	40-140	1187	1.22	30	
Phenanthrene	1209	41	1301	0	92.9	40-140	1190	1.64	30	
Pyrene	1189	41	1301	0	91.4	40-140	954.5	21.9	30	
Surr: 2-Fluorobiphenyl	2893	0	3254	0	88.9	20-140	2794	3.47	0	
Surr: 4-Terphenyl-d14	3918	0	3254	0	120	22-172	3432	13.2	0	
Surr: Nitrobenzene-d5	2259	0	3254	0	69.4	28-140	2390	5.62	0	

The following samples were analyzed in this batch:

17101184-01B	17101184-02B	17101184-03B
17101184-04B	17101184-05B	17101184-06B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **109470** Instrument ID **VMS9** Method: **SW8260B**

MBLK		Sample ID: MBLK-109470-109470				Units: µg/Kg-dry		Analysis Date: 10/26/2017 01:48 A		
Client ID:		Run ID: VMS9_171025B				SeqNo: 4722879		Prep Date: 10/24/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U	28								
1,1,2,2-Tetrachloroethane	U	24								
1,1,2-Trichloroethane	U	30								
1,1-Dichloroethane	U	25								
1,1-Dichloroethene	U	27								
1,2,3-Trichlorobenzene	U	44								
1,2,4-Trichlorobenzene	U	74								
1,2,4-Trimethylbenzene	U	20								
1,2-Dibromo-3-chloropropane	U	41								
1,2-Dibromoethane	U	33								
1,2-Dichlorobenzene	U	30								
1,2-Dichloroethane	U	27								
1,2-Dichloropropane	U	28								
1,3,5-Trimethylbenzene	U	44								
1,3-Dichlorobenzene	U	32								
1,4-Dichlorobenzene	U	26								
2-Butanone	U	130								
2-Hexanone	U	66								
4-Methyl-2-pentanone	U	73								
Benzene	U	23								
Bromochloromethane	U	45								
Bromodichloromethane	U	27								
Bromoform	U	35								
Bromomethane	U	43								
Carbon disulfide	U	34								
Carbon tetrachloride	U	18								
Chlorobenzene	U	30								
Chloroethane	U	64								
Chloroform	U	34								
Chloromethane	U	40								
cis-1,2-Dichloroethene	U	28								
cis-1,3-Dichloropropene	U	38								
Cyclohexane	U	50								
Dibromochloromethane	U	23								
Dichlorodifluoromethane	U	44								
Ethylbenzene	U	23								
Isopropylbenzene	U	39								
m,p-Xylene	U	45								
Methyl tert-butyl ether	U	32								
Methylcyclohexane	U	43								
Methylene chloride	U	46								
Naphthalene	U	17								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: 109470	Instrument ID VMS9	Method: SW8260B
o-Xylene	U	32
Styrene	U	71
Tetrachloroethene	U	49
Toluene	U	33
trans-1,2-Dichloroethene	U	28
trans-1,3-Dichloropropene	U	18
Trichloroethene	U	27
Trichlorofluoromethane	U	19
Vinyl chloride	U	32
Xylenes, Total	U	77
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1010</i>	<i>0 1000 0 101 70-130 0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>970</i>	<i>0 1000 0 97 70-130 0</i>
<i>Surr: Dibromofluoromethane</i>	<i>954</i>	<i>0 1000 0 95.4 70-130 0</i>
<i>Surr: Toluene-d8</i>	<i>937.5</i>	<i>0 1000 0 93.8 70-130 0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **109470** Instrument ID **VMS9** Method: **SW8260B**

LCS		Sample ID: LCS-109470-109470				Units: µg/Kg-dry		Analysis Date: 10/26/2017 12:36 PM		
Client ID:		Run ID: VMS9_171025B				SeqNo: 4722904		Prep Date: 10/24/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1088	28	1000	0	109	70-135	0			
1,1,2,2-Tetrachloroethane	916.5	24	1000	0	91.6	55-130	0			
1,1,2-Trichloroethane	930.5	30	1000	0	93	60-125	0			
1,1-Dichloroethane	999.5	25	1000	0	100	75-125	0			
1,1-Dichloroethene	1245	27	1000	0	124	65-135	0			
1,2,3-Trichlorobenzene	793.5	44	1000	0	79.4	60-135	0			
1,2,4-Trichlorobenzene	806	74	1000	0	80.6	65-130	0			
1,2,4-Trimethylbenzene	908.5	20	1000	0	90.8	65-135	0			
1,2-Dibromo-3-chloropropane	883.5	41	1000	0	88.4	40-135	0			
1,2-Dibromoethane	1192	33	1000	0	119	80-195	0			
1,2-Dichlorobenzene	851	30	1000	0	85.1	75-120	0			
1,2-Dichloroethane	861.5	27	1000	0	86.2	70-135	0			
1,2-Dichloropropane	949	28	1000	0	94.9	70-120	0			
1,3,5-Trimethylbenzene	919.5	44	1000	0	92	65-135	0			
1,3-Dichlorobenzene	864.5	32	1000	0	86.4	70-125	0			
1,4-Dichlorobenzene	853.5	26	1000	0	85.4	70-125	0			
2-Butanone	857.5	130	1000	0	85.8	30-160	0			
2-Hexanone	797	66	1000	0	79.7	45-145	0			
4-Methyl-2-pentanone	1018	73	1000	0	102	74-176	0			
Benzene	945.5	23	1000	0	94.6	75-125	0			
Bromochloromethane	963.5	45	1000	0	96.4	74-134	0			
Bromodichloromethane	991	27	1000	0	99.1	70-130	0			
Bromoform	862.5	35	1000	0	86.2	55-135	0			
Bromomethane	850.5	43	1000	0	85	50-170	0			
Carbon disulfide	1308	34	1000	0	131	45-160	0			
Carbon tetrachloride	948	18	1000	0	94.8	65-135	0			
Chlorobenzene	883.5	30	1000	0	88.4	75-125	0			
Chloroethane	1024	64	1000	0	102	40-155	0			
Chloroform	986	34	1000	0	98.6	70-125	0			
Chloromethane	767	40	1000	0	76.7	50-144	0			
cis-1,2-Dichloroethene	979.5	28	1000	0	98	65-125	0			
cis-1,3-Dichloropropene	888.5	38	1000	0	88.8	70-125	0			
Dibromochloromethane	802	23	1000	0	80.2	65-135	0			
Dichlorodifluoromethane	790	44	1000	0	79	35-135	0			
Ethylbenzene	890	23	1000	0	89	75-125	0			
Isopropylbenzene	919	39	1000	0	91.9	75-130	0			
m,p-Xylene	1822	45	2000	0	91.1	80-125	0			
Methyl tert-butyl ether	938.5	32	1000	0	93.8	75-125	0			
Methylene chloride	965	46	1000	0	96.5	55-145	0			
Naphthalene	786	17	1000	0	78.6	40-140	0			
o-Xylene	908.5	32	1000	0	90.8	75-125	0			
Styrene	950	71	1000	0	95	80-138	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: 109470	Instrument ID VMS9			Method: SW8260B			
Tetrachloroethene	1012	49	1000	0	101	67-167	0
Toluene	903	33	1000	0	90.3	70-125	0
trans-1,2-Dichloroethene	1090	28	1000	0	109	65-135	0
trans-1,3-Dichloropropene	760.5	18	1000	0	76	59-129	0
Trichloroethene	978	27	1000	0	97.8	75-125	0
Trichlorofluoromethane	955	19	1000	0	95.5	25-185	0
Vinyl chloride	925	32	1000	0	92.5	60-125	0
Xylenes, Total	2730	77	3000	0	91	75-125	0
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1008</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>101</i>	<i>70-130</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>995</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>99.5</i>	<i>70-130</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>1077</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>108</i>	<i>70-130</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>977.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>97.8</i>	<i>70-130</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **109470** Instrument ID **VMS9** Method: **SW8260B**

MS				Sample ID: 17101184-04A MS			Units: µg/Kg-dry		Analysis Date: 10/26/2017 10:17 A	
Client ID: WS-B-2 (3.5-4.5')				Run ID: VMS9_171025B			SeqNo: 4722901		Prep Date: 10/24/2017	
							DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1264	35	1215	0	104	70-135	0			
1,1,2,2-Tetrachloroethane	902.6	29	1215	0	74.3	55-130	0			
1,1,2-Trichloroethane	1123	36	1215	0	92.4	60-125	0			
1,1-Dichloroethane	1273	31	1215	0	105	75-125	0			
1,1-Dichloroethene	1546	33	1215	0	127	65-135	0			
1,2,3-Trichlorobenzene	877.1	53	1215	0	72.2	60-135	0			
1,2,4-Trichlorobenzene	930	90	1215	0	76.6	65-130	0			
1,2,4-Trimethylbenzene	1141	24	1215	0	93.9	65-135	0			
1,2-Dibromo-3-chloropropane	873.5	49	1215	0	71.9	40-135	0			
1,2-Dibromoethane	1424	41	1215	0	117	80-195	0			
1,2-Dichlorobenzene	1035	36	1215	0	85.2	75-120	0			
1,2-Dichloroethane	1099	33	1215	0	90.4	70-135	0			
1,2-Dichloropropane	1161	34	1215	0	95.6	70-120	0			
1,3,5-Trimethylbenzene	1186	53	1215	0	97.6	65-135	0			
1,3-Dichlorobenzene	1058	39	1215	0	87	70-125	0			
1,4-Dichlorobenzene	1040	32	1215	0	85.6	70-125	0			
2-Butanone	1813	160	1215	0	149	30-160	0			
2-Hexanone	1434	81	1215	0	118	45-145	0			
4-Methyl-2-pentanone	1157	89	1215	0	95.2	74-176	0			
Benzene	1180	27	1215	0	97.2	75-125	0			
Bromochloromethane	1220	54	1215	0	100	74-134	0			
Bromodichloromethane	1116	33	1215	0	91.8	70-130	0			
Bromoform	969.4	43	1215	0	79.8	55-135	0			
Bromomethane	1006	53	1215	0	82.8	50-170	0			
Carbon disulfide	1288	41	1215	0	106	45-160	0			
Carbon tetrachloride	1072	22	1215	0	88.2	65-135	0			
Chlorobenzene	1081	36	1215	0	89	75-125	0			
Chloroethane	134.2	77	1215	0	11	40-155	0			S
Chloroform	1271	41	1215	0	105	70-125	0			
Chloromethane	997.4	49	1215	0	82.1	50-144	0			
cis-1,2-Dichloroethene	1224	34	1215	0	101	65-125	0			
cis-1,3-Dichloropropene	973.7	47	1215	0	80.2	70-125	0			
Dibromochloromethane	868.6	28	1215	0	71.5	65-135	0			
Dichlorodifluoromethane	1013	54	1215	0	83.4	35-135	0			
Ethylbenzene	1077	28	1215	0	88.6	75-125	0			
Isopropylbenzene	1143	48	1215	0	94	75-130	0			
m,p-Xylene	2212	55	2430	0	91	80-125	0			
Methyl tert-butyl ether	1188	39	1215	0	97.8	75-125	0			
Methylene chloride	1273	56	1215	0	105	55-145	0			
Naphthalene	871.6	21	1215	0	71.8	40-140	0			
o-Xylene	1124	39	1215	0	92.6	75-125	0			
Styrene	1191	86	1215	0	98	80-138	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: 109470	Instrument ID VMS9		Method: SW8260B				
Tetrachloroethene	2004	60	1215	0	165	67-167	0
Toluene	1065	40	1215	0	87.7	70-125	0
trans-1,2-Dichloroethene	1363	34	1215	0	112	65-135	0
trans-1,3-Dichloropropene	794.5	22	1215	0	65.4	59-129	0
Trichloroethene	1337	32	1215	0	110	75-125	0
Trichlorofluoromethane	1189	23	1215	0	97.8	25-185	0
Vinyl chloride	1209	39	1215	0	99.5	60-125	0
Xylenes, Total	3337	94	3645	0	91.6	75-125	0
<i>Surr: 1,2-Dichloroethane-d4</i>	1223	0	1215	0	101	70-130	0
<i>Surr: 4-Bromofluorobenzene</i>	1249	0	1215	0	103	70-130	0
<i>Surr: Dibromofluoromethane</i>	1239	0	1215	0	102	70-130	0
<i>Surr: Toluene-d8</i>	1125	0	1215	0	92.6	70-130	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **109470** Instrument ID **VMS9** Method: **SW8260B**

MSD				Sample ID: 17101184-04A MSD			Units: µg/Kg-dry		Analysis Date: 10/26/2017 10:42 A		
Client ID: WS-B-2 (3.5-4.5')			Run ID: VMS9_171025B			SeqNo: 4722903		Prep Date: 10/24/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
1,1,1-Trichloroethane	1378	35	1215	0	113	70-135	1264	8.64	30		
1,1,2,2-Tetrachloroethane	971.3	29	1215	0	80	55-130	902.6	7.33	30		
1,1,2-Trichloroethane	1191	36	1215	0	98	60-125	1123	5.88	30		
1,1-Dichloroethane	1332	31	1215	0	110	75-125	1273	4.57	30		
1,1-Dichloroethene	1639	33	1215	0	135	65-135	1546	5.8	30		
1,2,3-Trichlorobenzene	970	53	1215	0	79.8	60-135	877.1	10.1	30		
1,2,4-Trichlorobenzene	1003	90	1215	0	82.6	65-130	930	7.54	30		
1,2,4-Trimethylbenzene	1211	24	1215	0	99.7	65-135	1141	5.99	30		
1,2-Dibromo-3-chloropropane	956.7	49	1215	0	78.8	40-135	873.5	9.09	30		
1,2-Dibromoethane	1489	41	1215	0	123	80-195	1424	4.5	30		
1,2-Dichlorobenzene	1088	36	1215	0	89.6	75-120	1035	4.98	30		
1,2-Dichloroethane	1178	33	1215	0	97	70-135	1099	6.94	30		
1,2-Dichloropropane	1269	34	1215	0	104	70-120	1161	8.9	30		
1,3,5-Trimethylbenzene	1232	53	1215	0	101	65-135	1186	3.82	30		
1,3-Dichlorobenzene	1137	39	1215	0	93.6	70-125	1058	7.25	30		
1,4-Dichlorobenzene	1128	32	1215	0	92.8	70-125	1040	8.13	30		
2-Butanone	1742	160	1215	0	143	30-160	1813	4	30		
2-Hexanone	1457	81	1215	0	120	45-145	1434	1.55	30		
4-Methyl-2-pentanone	1189	89	1215	0	97.9	74-176	1157	2.8	30		
Benzene	1283	27	1215	0	106	75-125	1180	8.38	30		
Bromochloromethane	1273	54	1215	0	105	74-134	1220	4.19	30		
Bromodichloromethane	1229	33	1215	0	101	70-130	1116	9.69	30		
Bromoform	1011	43	1215	0	83.2	55-135	969.4	4.23	30		
Bromomethane	998.6	53	1215	0	82.2	50-170	1006	0.727	30		
Carbon disulfide	1364	41	1215	0	112	45-160	1288	5.77	30		
Carbon tetrachloride	1150	22	1215	0	94.7	65-135	1072	7.05	30		
Chlorobenzene	1141	36	1215	0	94	75-125	1081	5.47	30		
Chloroethane	153.7	77	1215	0	12.6	40-155	134.2	13.5	30	S	
Chloroform	1292	41	1215	0	106	70-125	1271	1.61	30		
Chloromethane	1010	49	1215	0	83.2	50-144	997.4	1.27	30		
cis-1,2-Dichloroethene	1260	34	1215	0	104	65-125	1224	2.89	30		
cis-1,3-Dichloropropene	1061	47	1215	0	87.4	70-125	973.7	8.6	30		
Dibromochloromethane	936.6	28	1215	0	77.1	65-135	868.6	7.54	30		
Dichlorodifluoromethane	1045	54	1215	0	86	35-135	1013	3.19	30		
Ethylbenzene	1157	28	1215	0	95.2	75-125	1077	7.13	30		
Isopropylbenzene	1228	48	1215	0	101	75-130	1143	7.23	30		
m,p-Xylene	2363	55	2430	0	97.2	80-125	2212	6.59	30		
Methyl tert-butyl ether	1191	39	1215	0	98	75-125	1188	0.306	30		
Methylene chloride	1281	56	1215	0	105	55-145	1273	0.618	30		
Naphthalene	941.5	21	1215	0	77.5	40-140	871.6	7.71	30		
o-Xylene	1188	39	1215	0	97.8	75-125	1124	5.47	30		
Styrene	1266	86	1215	0	104	80-138	1191	6.18	30		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: 109470	Instrument ID VMS9			Method: SW8260B						
Tetrachloroethene	2132	60	1215	0	176	67-167	2004	6.2	30	S
Toluene	1129	40	1215	0	93	70-125	1065	5.81	30	
trans-1,2-Dichloroethene	1417	34	1215	0	117	65-135	1363	3.85	30	
trans-1,3-Dichloropropene	838.8	22	1215	0	69	59-129	794.5	5.43	30	
Trichloroethene	1412	32	1215	0	116	75-125	1337	5.48	30	
Trichlorofluoromethane	1257	23	1215	0	104	25-185	1189	5.61	30	
Vinyl chloride	1253	39	1215	0	103	60-125	1209	3.6	30	
Xylenes, Total	3550	94	3645	0	97.4	75-125	3337	6.21	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	1282	0	1215	0	106	70-130	1223	4.7	30	
<i>Surr: 4-Bromofluorobenzene</i>	1250	0	1215	0	103	70-130	1249	0.0972	30	
<i>Surr: Dibromofluoromethane</i>	1268	0	1215	0	104	70-130	1239	2.33	30	
<i>Surr: Toluene-d8</i>	1123	0	1215	0	92.4	70-130	1125	0.162	30	

The following samples were analyzed in this batch:

17101184-01A	17101184-02A	17101184-03A
17101184-04A	17101184-05A	17101184-06A
17101184-07A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **R222673** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R222673				Units: % of sample		Analysis Date: 10/19/2017 12:23 PM		
Client ID:		Run ID: MOIST_171019B				SeqNo: 4711437		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.050

LCS		Sample ID: LCS-R222673				Units: % of sample		Analysis Date: 10/19/2017 12:23 PM		
Client ID:		Run ID: MOIST_171019B				SeqNo: 4711436		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 17101025-12B DUP				Units: % of sample		Analysis Date: 10/19/2017 12:23 PM		
Client ID:		Run ID: MOIST_171019B				SeqNo: 4711417		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 15.06 0.050 0 0 0 0-0 15.56 3.27 5

DUP		Sample ID: 17101184-02B DUP				Units: % of sample		Analysis Date: 10/19/2017 12:23 PM		
Client ID: WS-B-1 (6.5-7.5')		Run ID: MOIST_171019B				SeqNo: 4711433		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 20.96 0.050 0 0 0 0-0 20.44 2.51 5

The following samples were analyzed in this batch:

17101184-01B	17101184-02B
--------------	--------------

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101184
Project: Site ID: 12.17 (21-41365B)

QC BATCH REPORT

Batch ID: **R222674** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R222674				Units: % of sample		Analysis Date: 10/19/2017 03:15 PM		
Client ID:		Run ID: MOIST_171019C				SeqNo: 4711464		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.050

LCS		Sample ID: LCS-R222674				Units: % of sample		Analysis Date: 10/19/2017 03:15 PM		
Client ID:		Run ID: MOIST_171019C				SeqNo: 4711463		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 17101184-06B DUP				Units: % of sample		Analysis Date: 10/19/2017 03:15 PM		
Client ID: WS-B-3 (8-9')		Run ID: MOIST_171019C				SeqNo: 4711450		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 13.62 0.050 0 0 0 0-0 13.57 0.368 5

DUP		Sample ID: 17101186-02B DUP				Units: % of sample		Analysis Date: 10/19/2017 03:15 PM		
Client ID:		Run ID: MOIST_171019C				SeqNo: 4711457		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 14.36 0.050 0 0 0 0-0 14.65 2 5

The following samples were analyzed in this batch:

17101184-03B	17101184-04B	17101184-05B
17101184-06B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Environmental

+1 513 733 5336

Everett, WA
+1 425 356 2600

+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID:

38990

+1 281 530 5656

Middletown, PA
+1 717 944 5541

+1 610 948 4903

Salt Lake City, UT
+1 801 266 7700

+1 304 356 3168

York, PA
+1 717 505 5280

Customer Information		Project Information		ALS Project Manager:		ALS Work Order #:		Parameter/Method Request for Analysis											
Purchase Order		Project Name	Site ID: 3110 12-17					A VOCs											
Work Order		Project Number	21-41365B					B PAHs											
Company Name	Ramboll Environ US Corporation	Bill To Company	Ramboll Environ US Corporation					C RCRA 8 Metals											
Send Report To	Donna Volk	Invoice Attn	Accounts Payable					D Lead											
Address	175 N Corporate Drive Suite 100	Address	175 N Corporate Drive Suite 100					E											
City/State/Zip	Brookfield, WI 53045	City/State/Zip	Brookfield, WI 53045					F											
Phone	(262) 901-0089	Phone	(262) 901-0089					G											
Fax	(262) 901-0079	Fax	(262) 901-0079					H											
e-Mail Address	dvolk@ramboll.com	e-Mail Address	dvolk@ramboll.com					I											
								J											

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	WS-B-1 (4-5')	10/17/17	1115	S	MEDH/ None	3	✓	✓	✓								
2	WS-B-1 (6.5-7.5')	10/17/17	1125	S	MEDH/ None	3	✓	✓	✓								
3	WS-B-2 (1-2')	10/17/17	1200	S	MEDH/ None	3	✓	✓	✓								
4	WS-B-2 (3.5-4.5')	10/17/17	1210	S	MEDH/ None	3	✓	✓	✓								
5	WS-B-3 (3-4')	10/17/17	1245	S	MEDH/ None	3	✓	✓	✓								
6	WS-B-3 (8-9')	10/17/17	1255	S	MEDH/ None	3	✓	✓	✓								
7	Trip blank				MEDH	1	✓										
8	Temperature blank					1											
9																	
10																	

Sampler(s) Please Print & Sign Tyler Burger Tyler Burger		Shipment Method FedEx ON		Turnaround Time in Business Days (BD) <input checked="" type="checkbox"/> 10 BD <input type="checkbox"/> 5 BD <input type="checkbox"/> 3 BD <input type="checkbox"/> 2 BD <input type="checkbox"/> 1 BD				Results Due Date:	
Relinquished by: Tyler Burger	Date: 10/17/17	Time: 1500	Received by: FedEx		Notes:				
Relinquished by: FedEx	Date: 10/18/17	Time: 0930	Received by (Laboratory):		Cooler ID 322	Cooler Temp 4.8°C	QC Package: (Check One Box Below)		
Logged by (Laboratory): Ke	Date: 10/18/17	Time: 1305	Checked by (Laboratory):		<input type="checkbox"/> Level II Std QC <input type="checkbox"/> TRRP Checklist <input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> Level IV SW846/CLP <input type="checkbox"/> Other				

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₃ 6-NaHSO₃ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Sample Receipt Checklist

Client Name: **ENVIRONINT - WI**

Date/Time Received: **18-Oct-17 09:30**

Work Order: **17101184**

Received by: **KRW**

Checklist completed by Keith Wurenga
eSignature

18-Oct-17
Date

Reviewed by: Chad Whelton
eSignature

19-Oct-17
Date

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>4.8/4.8 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>10/18/2017 1:11:16 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

(NO TEXT FOR THIS PAGE)



Appendix C – Pertinent WDNR File Information



(NO TEXT FOR THIS PAGE)

Wisconsin Department of Natural Resources

Environmental Cleanup & Brownfields Redevelopment

BRRTS on the Web

Click the Location Name below to view the Location Details page for this Activity. Other Activities, if present, may be viewed from that page.

Basic Search >> 02-68-174804 Activity Details

02-68-174804 WI DOT WAUKESHA CONCRETE PROCUCTS						
CLOSED ERP						
Location Name (Click Location Name to View Location Details)				County	WDNR Region	
WALMART SUPERCENTER #1635				WAUKESHA	SOUTHEAST	
Address				Municipality		
2000 S WEST AVE				WAUKESHA		
Public Land Survey System			Latitude	Google Maps	RR Sites Map	
NE 1/4 of the SW 1/4 of Sec 15, T06N, R19E			42.9800235	CLICK TO VIEW	CLICK TO VIEW	
Additional Location Description			Longitude	Facility ID	Size (Acres)	
			-88.237834	268354570	UNKNOWN	
Jurisdiction	PECFA No.	EPA Cerclis ID	Start Date	End Date	Last Action	
DNR RR			1995-09-25	1997-09-22	1997-09-22	
Characteristics						
PECFA Tracked?	EPA NPL Site?	Eligible for PECFA Funds?	Above Ground Storage Tank?	Drycleaner?	Co-Contamination?	On GIS Registry?
No	No	No	No	No	No	No
Actions						
Place Cursor Over Action Code to View Description						
Date	Code	Name	Comment			
1995-09-25	1	Notification				
1997-09-22	11	Activity Closed				
Impacts						
Type			Comment			
Soil Contamination			-			
Substances						
Substance		Type	Amount Released	Units		
Diesel Fuel		Petroleum				
Who						
Role		Name/Address				
Responsible Party		WAUKESHA CONCRETE PROD 2000 S WEST AVE WAUKESHA, WI 53186				
For Additional Information, Please Contact						
CHUE YEE YANG 414-263-8366 chueyee.yang@wisconsin.gov						

BRRTS data comes from various sources, both internal and external to DNR. There may be omissions and errors in the data and delays in updating new information. Please see the [disclaimers page](#) for more information. We welcome your [Feedback](#).

101 S. Webster Street . PO Box 7921 . Madison, Wisconsin 53707-7921 . 608.266.2621

Release 2.5.6 | 04/19/2017 | [Release Notes](#)

Wisconsin Department of Natural Resources

Environmental Cleanup & Brownfields Redevelopment

BRRTS on the Web

Click the Location Name below to view the Location Details page for this Activity. Other Activities, if present, may be viewed from that page.

Basic Search >> 02-68-552746 Activity Details

<h2 style="margin: 0;">02-68-552746 CRETEX CONCRETE PRODUCTS MIDWEST INC LOT 1 &</h2> <div style="background-color: green; color: white; text-align: center; padding: 2px 5px; margin: 5px auto; width: fit-content;">CLOSED ERP</div>						
<div style="display: flex; align-items: center;"> <div> <p>Cleanup has been approved at this location but some contamination remains. Due to this remaining residual contamination, one or more continuing obligations are applicable to this location (e.g., an asphalt cap or other barrier covering the contamination). For information specific to the continuing obligations at this location, read the Closure Letter within the GIS Registry Packet in the Documents section below. For general information on managing continuing obligations and residual contamination click here. You must contact DNR before constructing a well. Remaining contamination must be properly handled if disturbed.</p> </div> </div>						
Location Name (Click Location Name to View Location Details)				County	WDNR Region	
WALMART SUPERCENTER #1635				WAUKESHA	SOUTHEAST	
Address				Municipality		
2000 S WEST AVE				WAUKESHA		
Public Land Survey System			Latitude	Google Maps	RR Sites Map	
NE 1/4 of the SW 1/4 of Sec 15, T06N, R19E			42.9796357	CLICK TO VIEW	CLICK TO VIEW	
Additional Location Description			Longitude	Facility ID	Size (Acres)	
			-88.2377887	268354570	32	
Jurisdiction	PECFA No.	EPA Cerclis ID	Start Date	End Date	Last Action	
DNR RR			2008-10-23	2011-11-15	2013-05-08	
Characteristics						
PECFA Tracked?	EPA NPL Site?	Eligible for PECFA Funds?	Above Ground Storage Tank?	Drycleaner?	Co-Contamination?	On GIS Registry?
No	No	No	No	No	No	Yes
Actions						
Place Cursor Over Action Code to View Description						
Date	Code	Name	Comment			
2008-10-23	29	Phase II Environmental Site Assessment Rpt Received				
2008-10-23	1	Notification				
2008-10-23	97	Request for Technical Assistance Received with Fee	REC'D CK# 347543 \$500.00 REFUNDED MOVED TO 02-68-554922			
2008-10-23	28	Phase I Environmental Site Assessment Rpt Received	AUTOPOPULATED FROM 29 ENTRY			
2008-10-23	98	Technical Assistance Provided				
2008-10-30	99	Miscellaneous	DV MET WITH REPRESENTATIVES OF PROPERTY OWNER AND PROPOSED PROPERTY DEVELOPER			
2008-11-04	2	RP Letter Sent				
2009-12-08	79	Closure Review Request Received	REC'D CK# 875034 \$750.00			
2009-12-08	710	Database Fee Paid for Soil	REC'D CK# 875034 \$200.00			
2009-12-08	50	GIS Registry Site	*** AUTO POPULATED BY 710 ACTION ENTRY ***			

2010-02-25	80	Closure Not Approved	DV. APPROVED PATHWAY TO CLOSURE, BUT CAP MUST BE INSTALLED & GIS DOCS. REVISED.	
2011-05-19	179	Closure Review Request Received (no fee required)		
2011-08-05	80	Closure Not Approved	REQTED REVISED DOC FOR GIS REGISTRY	
2011-09-07	130	DNR Regulatory Reminder Sent	Vapor Intrusion (VI) Assessment Notification Ltr Sent	
Linked to Code 130:		0268552746_VI_Letter.pdf	Click to Download or Open	
2011-09-30	179	Closure Review Request Received (no fee required)		
2011-11-15	11	Activity Closed		
2011-11-15	232	Continuing Obligation - Residual Soil Contamination		
2011-11-15	56	Continuing Obligation(s) Required - GIS Registry Site		
Linked to Code 56:		0268552746_Registry_Packet.pdf	Click to Download or Open	
2011-11-15	222	Continuing Obligation - Maintain Cap Over Contaminated Area		
2013-05-08	100	GIS Registry QAQC Completed	JH	
Impacts				
Type		Comment		
Concrete/Asphalt		-		
Groundwater Contamination		-		
Soil Contamination		-		
Substances				
Substance		Type	Amount Released	Units
Volatile Organic Compounds		VOC		
Polynuclear Aromatic Hydrocarbons		Petroleum		
Metals		Metals		
Petroleum - Unknown Type		Petroleum		
Who				
Role		Name/Address		
Responsible Party		HIGHWAY 59 WEST LIMITED PARTNERSHIP 1000 N WATER ST, SITE 1700 MILWAUKEE, WI 53202		

For Additional Information, Please Contact	
CHUE YEE YANG 414-263-8366	chueyee.yang@wisconsin.gov

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The Official Internet site for the Wisconsin Department of Natural Resources
101 S. Webster Street . PO Box 7921 . Madison, Wisconsin 53707-7921 . 608.266.2621

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GIS REGISTRY
Cover Sheet

August 2011
(RR-5367)

Source Property Information

BRRTS #: 02-68-552746

ACTIVITY NAME: Cretex Concrete Products Midwest- Lot 1 & Outlot 1

PROPERTY ADDRESS: 2000-2002 S. West Avenue

MUNICIPALITY: Waukesha

PARCEL ID #: WAKC 1353424

CLOSURE DATE: Nov 15, 2011

FID #: 268354570

DATCP #:

PECFA#:

***WTM COORDINATES:**

X: 663684 **Y:** 280060

** Coordinates are in
WTM83, NAD83 (1991)*

WTM COORDINATES REPRESENT:

☐ Approximate Center Of Contaminant Source

☒ Approximate Source Parcel Center

Please check as appropriate: (BRRTS Action Code)

Contaminated Media:

☐ Groundwater Contamination > ES (236)

☐ Contamination in ROW

☐ Off-Source Contamination

*(note: for list of off-source properties
see "Impacted Off-Source Property" form)*

☒ Soil Contamination > *RCL or **SSRCL (232)

☐ Contamination in ROW

☐ Off-Source Contamination

*(note: for list of off-source properties
see "Impacted Off-Source Property" form)*

Land Use Controls:

☐ N/A (Not Applicable)

☐ Soil: maintain industrial zoning (220)

*(note: soil contamination concentrations
between non-industrial and industrial levels)*

☐ Structural Impediment (224)

☐ Site Specific Condition (228)

☒ Cover or Barrier (222)

*(note: maintenance plan for
groundwater or direct contact)*

☐ Vapor Mitigation (226)

☐ Maintain Liability Exemption (230)

*(note: local government unit or economic
development corporation was directed to
take a response action)*

Monitoring Wells:

Are all monitoring wells properly abandoned per NR 141? (234)

☒ Yes ☐ No ☐ N/A

** Residual Contaminant Level*

***Site Specific Residual Contaminant Level*

This Adobe Fillable form is intended to provide a list of information that is required for evaluation for case closure. It is to be used in conjunction with Form 4400-202, Case Closure Request. The closure of a case means that the Department has determined that no further response is required at that time based on the information that has been submitted to the Department.

NOTICE: Completion of this form is mandatory for applications for case closure pursuant to ch. 292, Wis. Stats. and ch. NR 726, Wis. Adm. Code, including cases closed under ch. NR 746 and ch. NR 726. The Department will not consider, or act upon your application, unless all applicable sections are completed on this form and the closure fee and any other applicable fees, required under ch. NR 749, Wis. Adm. Code, Table 1 are included. It is not the Department's intention to use any personally identifiable information from this form for any purpose other than reviewing closure requests and determining the need for additional response action. The Department may provide this information to requesters as required by Wisconsin's Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

BRRTS #: 02-68-552746 (No Dashes) PARCEL ID #: WAKC 1353424
ACTIVITY NAME: Cretex Concrete Products Midwest- Lot 1 & Outlot 1 WTM COORDINATES: X: 663684 Y: 280060

CLOSURE DOCUMENTS (the Department adds these items to the final GIS packet for posting on the Registry)

- ☒ **Closure Letter**
- ☒ **Maintenance Plan** (if activity is closed with a land use limitation or condition (land use control) under s. 292.12, Wis. Stats.)
- ☐ **Continuing Obligation Cover Letter** (for property owners affected by residual contamination and/or continuing obligations)
- ☐ **Conditional Closure Letter**
- ☐ **Certificate of Completion (COC)** (for VPLE sites)

SOURCE LEGAL DOCUMENTS

- ☒ **Deed:** The most recent deed as well as legal descriptions, for the **Source Property** (where the contamination originated). Deeds for other, off-source (off-site) properties are located in the **Notification** section.
Note: If a property has been purchased with a land contract and the purchaser has not yet received a deed, a copy of the land contract which includes the legal description shall be submitted instead of the most recent deed. If the property has been inherited, written documentation of the property transfer should be submitted along with the most recent deed.
- ☒ **Certified Survey Map:** A copy of the certified survey map or the relevant section of the recorded plat map for those properties where the legal description in the most recent deed refers to a certified survey map or a recorded plat map. (lots on subdivided or platted property (e.g. lot 2 of xyz subdivision)).

Figure #: NA

Title: Certified Survey Map 10488

- ☒ **Signed Statement:** A statement signed by the Responsible Party (RP), which states that he or she believes that the attached legal description accurately describes the correct contaminated property.

MAPS (meeting the visual aid requirements of s. NR 716.15(2)(h))

Maps must be no larger than 11 x 17 inches unless the map is submitted electronically.

- ☒ **Location Map:** A map outlining all properties within the contaminated site boundaries on a U.S.G.S. topographic map or plat map in sufficient detail to permit easy location of all parcels. If groundwater standards are exceeded, include the location of all potable wells within 1200 feet of the site.
Note: Due to security reasons municipal wells are not identified on GIS Packet maps. However, the locations of these municipal wells must be identified on Case Closure Request maps.

Figure #: 1

Title: Site Location Map

- ☒ **Detailed Site Map:** A map that shows all relevant features (buildings, roads, individual property boundaries, contaminant sources, utility lines, monitoring wells and potable wells) within the contaminated area. This map is to show the location of all contaminated public streets, and highway and railroad rights-of-way in relation to the source property and in relation to the boundaries of groundwater contamination exceeding a ch. NR 140 Enforcement Standard (ES), and/or in relation to the boundaries of soil contamination exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Levels (SSRCL) as determined under s. NR 720.09, 720.11 and 720.19.

Figure #: 2

Title: Site Layout

- ☒ **Soil Contamination Contour Map:** For sites closing with residual soil contamination, this map is to show the location of all contaminated soil and a single contour showing the horizontal extent of each area of contiguous residual soil contamination that exceeds a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL) as determined under s. NR 720.09, 720.11 and 720.19.

Figure #: 3

Title: Soil Contamination Map

BRRTS #: 02-68-552746

ACTIVITY NAME: Cretex Concrete Products Midwest- Lot 1 & Outlot 1

MAPS (continued)

- ☒ **Geologic Cross-Section Map:** A map showing the source location and vertical extent of residual soil contamination exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL). If groundwater contamination exceeds a ch. NR 140 Enforcement Standard (ES) when closure is requested, show the source location and vertical extent, water table and piezometric elevations, and locations and elevations of geologic units, bedrock and confining units, if any.

Figure #: 4 Title: Cross Section A-A'

Figure #: 5 Title: Geological Cross-Section

- ☐ **Groundwater Isoconcentration Map:** For sites closing with residual groundwater contamination, this map shows the horizontal extent of all groundwater contamination exceeding a ch. NR140 Preventive Action Limit (PAL) and an Enforcement Standard (ES). Indicate the direction and date of groundwater flow, based on the most recent sampling data.

Note: This is intended to show the total area of contaminated groundwater.

Figure #: Title:

- ☐ **Groundwater Flow Direction Map:** A map that represents groundwater movement at the site. If the flow direction varies by more than 20° over the history of the site, submit 2 groundwater flow maps showing the maximum variation in flow direction.

Figure #: Title:

Figure #: Title:

TABLES (meeting the requirements of s. NR 716.15(2)(h)(3))

Tables must be no larger than 11 x 17 inches unless the table is submitted electronically. Tables must not contain shading and/or cross-hatching. The use of **BOLD** or *ITALICS* is acceptable.

- ☒ **Soil Analytical Table:** A table showing remaining soil contamination with analytical results and collection dates.
Note: This is one table of results for the contaminants of concern. Contaminants of concern are those that were found during the site investigation, that remain after remediation. It may be necessary to create a new table to meet this requirement.

Table #: 1 Title: Summary of Soil Sample Analytical Results

- ☐ **Groundwater Analytical Table:** Table(s) that show the most recent analytical results and collection dates, for all monitoring wells and any potable wells for which samples have been collected.

Table #: Title:

- ☐ **Water Level Elevations:** Table(s) that show the previous four (at minimum) water level elevation measurements/dates from all monitoring wells. If present, free product is to be noted on the table.

Table #: Title:

IMPROPERLY ABANDONED MONITORING WELLS

For each monitoring well not properly abandoned according to requirements of s. NR 141.25 include the following documents.

Note: If the site is being listed on the GIS Registry for only an improperly abandoned monitoring well you will only need to submit the documents in this section for the GIS Registry Packet.

- ☒ **Not Applicable**

- ☐ **Site Location Map:** A map showing all surveyed monitoring wells with specific identification of the monitoring wells which have not been properly abandoned.

Note: If the applicable monitoring wells are distinctly identified on the Detailed Site Map this Site Location Map is not needed.

Figure #: Title:

- ☐ **Well Construction Report:** Form 4440-113A for the applicable monitoring wells.

- ☐ **Deed:** The most recent deed as well as legal descriptions for each property where a monitoring well was not properly abandoned.

- ☐ **Notification Letter:** Copy of the notification letter to the affected property owner(s).

BRRTS #: 02-68-552746

ACTIVITY NAME: Cretex Concrete Products Midwest- Lot 1 & Outlot 1

NOTIFICATIONS

Source Property

☒ **Not Applicable**

☐ **Letter To Current Source Property Owner:** If the source property is owned by someone other than the person who is applying for case closure, include a copy of the letter notifying the current owner of the source property that case closure has been requested.

☐ **Return Receipt/Signature Confirmation:** Written proof of date on which confirmation was received for notifying current source property owner.

Off-Source Property

Group the following information per individual property and label each group according to alphabetic listing on the "Impacted Off-Source Property" attachment.

☒ **Not Applicable**

☐ **Letter To "Off-Source" Property Owners:** Copies of all letters sent by the Responsible Party (RP) to owners of properties with groundwater exceeding an Enforcement Standard (ES), and to owners of properties that will be affected by a land use control under s. 292.12, Wis. Stats.

Note: Letters sent to off-source properties regarding residual contamination must contain standard provisions in Appendix A of ch. NR 726.

Number of "Off-Source" Letters:

☐ **Return Receipt/Signature Confirmation:** Written proof of date on which confirmation was received for notifying any off-source property owner.

☐ **Deed of "Off-Source" Property:** The most recent deed(s) as well as legal descriptions, for all affected deeded **off-source** property(ies). This does not apply to right-of-ways.

Note: If a property has been purchased with a land contract and the purchaser has not yet received a deed, a copy of the land contract which includes the legal description shall be submitted instead of the most recent deed. If the property has been inherited, written documentation of the property transfer should be submitted along with the most recent deed.

☐ **Certified Survey Map:** A copy of the certified survey map or the relevant section of the recorded plat map for those properties where the legal description in the most recent deed refers to a certified survey map or a recorded plat map. (lots on subdivided or platted property (e.g. lot 2 of xyz subdivision)).

Figure #:

Title:

☐ **Letter To "Governmental Unit/Right-Of-Way" Owners:** Copies of all letters sent by the Responsible Party (RP) to a city, village, municipality, state agency or any other entity responsible for maintenance of a public street, highway, or railroad right-of-way, within or partially within the contaminated area, for contamination exceeding a groundwater Enforcement Standard (ES) and/or soil exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL).

Number of "Governmental Unit/Right-Of-Way Owner" Letters:



November 15, 2011

Mr. Michael Allan
Wal-Mart Real Estate Business Trust
2001 Southeast 10th Avenue
Bentonville, AR 72716

Subject: Final Case Closure
Former Cretex Concrete Products Midwest, Inc., Lot 1 and Outlot 1
2000-2002 S. West Avenue, Waukesha, WI
FID# 268354570, BRRTS# 02-68-552746

Dear Mr. Allan:

On September 30, 2011, the Wisconsin Department of Natural Resources (the Department) received the revised case closure request that was prepared by Professional Service Industries, Inc. (PSI) for the case at the above referenced property. The Department reviews environmental remediation cases for compliance with state rules and statutes to maintain consistency in the closure of these cases.

The Department reviewed the case closure request regarding the Polycyclic Aromatic Hydrocarbon (PAH) contamination at this site. Based on the correspondence and data provided, it appears that your case meets the closure requirements in ch. NR 726, Wisconsin Administrative Code. The Department considers this case closed and no further investigation or remediation is required at this time. However, you and future property owners must comply with certain continuing obligations as explained in this letter.

GIS Registry

This site will be listed on the Remediation and Redevelopment Program's internet accessible GIS Registry, to provide notice of residual contamination, and of the continuing obligations. The continuing obligations for this site are summarized below:

- Residual soil contamination exists that must be properly managed should it be excavated or removed.
- Pavement, an engineered cover or a soil barrier must be maintained over contaminated soil and the state must approve any changes to this barrier.

All site information, including the maintenance plan, is also on file at the Southeast Regional DNR office, at 141 NW Barstow Street in Waukesha, WI. This letter and information that was submitted with your closure request application, including the maintenance plan, will be included on the GIS Registry,

in a PDF attachment. To review the sites on the GIS Registry web page, visit the RR Sites Map page at <http://dnr.wi.gov/org/aw/rr/gis/index.htm>. If the property is listed on the GIS Registry because of remaining contamination and you intend to construct or reconstruct a well, you will need prior Department approval in accordance with s. NR 812.09(4) (w), Wis. Adm. Code. To obtain approval, Form 3300-254 needs to be completed and submitted to the DNR Drinking and Groundwater program's regional water supply specialist. This form can be obtained on-line at <http://dnr.wi.gov/org/water/dwg/3300254.pdf> or at the web address listed above for the GIS Registry.

Closure Conditions

Please be aware that pursuant to s. 292.12 Wisconsin Statutes, compliance with the requirements of this letter is a responsibility to which you and any subsequent property owners must adhere. You must pass on both the information about these continuing obligations and the maintenance plan to the next property owner or owners. If these requirements are not followed or if additional information regarding site conditions indicates that contamination on or from the site poses a threat to public health, safety, welfare, or the environment, the Department may take enforcement action under s. 292.11 Wisconsin Statutes to ensure compliance with the specified requirements, limitations or other conditions related to the property or this case may be reopened pursuant to s. NR 726.09, Wis. Adm. Code. The Department intends to conduct inspections in the future to ensure that the conditions included in this letter including compliance with attached maintenance plans are met.

Cover or Barrier

Pursuant to s. 292.12(2)(a), Wis. Stats., the pavement, building foundation and soil cover that currently exist at the site shall be maintained in compliance with the attached maintenance plan in order to prevent direct contact with residual soil contamination that might otherwise pose a threat to human health.

Soil contamination remains at the site based on the information submitted to the Department of Natural Resources. If soil at the site is excavated in the future, the property owner at the time of excavation must sample and analyze the excavated soil to determine if residual contamination remains. If sampling confirms that contamination is present the property owner at the time of excavation will need to determine whether the material is considered solid or hazardous waste and ensure that any storage, treatment or disposal is in compliance with applicable statutes and rules. In addition, all current and future owners and occupants of the property need to be aware that excavation of the contaminated soil may pose an inhalation or other direct contact hazard and as a result special precautions may need to be taken during excavation activities to prevent a health threat to humans.

Prohibited Activities

The following activities are prohibited on any portion of the property where pavement, a building foundation or soil cover are required, unless prior written approval has been obtained from the Wisconsin Department of Natural Resources: 1) removal of the existing barrier; 2) replacement with another barrier; 3) excavating or grading of the land surface; 4) filling on capped or paved areas; 5) plowing for agricultural cultivation; 6) construction or placement of a building or other structure.

Upon Department approval to replace the existing barrier, the replacement barrier must be one of similar permeability, until contaminant levels no longer exceed the applicable standards.

Chapter NR 140, Wis. Adm. Code Exemption

Recent groundwater monitoring data at this site indicates that for benzo(a)pyrene, benzo(b)fluoranthene and chrysene at monitoring well MW-3, lead and arsenic at MW-1, MW-2, MW-3 and MW-4, and tetrachloroethene in MW-2, contaminant levels exceed the NR 140 Preventive Action Limit (PAL) but are below the Enforcement Standard (ES). The Department may grant an exemption to a PAL for a substance of public health concern; other than nitrate, pursuant to s. NR 140.28(2)(b), Wis. Adm. Code, if all of the following criteria are met:

1. The measured or anticipated increase in the concentration of the substance will be minimized to the extent technically and economically feasible.
2. Compliance with the PAL is either not technically or economically feasible.
3. The enforcement standard for the substance will not be attained or exceeded at the point of standards application. [Note: at this site the point of standards application is all points where groundwater is monitored.]
4. Any existing or projected increase in the concentration of the substance above the background concentration does not present a threat to public health or welfare.

Based on the information you provided, the Department believes that these criteria have been or will be met because a remedial excavation has occurred and the site is capped. Therefore, pursuant to s. NR 140.28, Wis. Adm. Code, an exemption to the PAL is granted for benzo(a)pyrene, benzo(b)fluoranthene and chrysene at monitoring well MW-3, lead and arsenic at MW-1, MW-2, MW-3 and MW-4, and tetrachloroethene in MW-2. Please keep this letter, because it serves as your exemption.

Post-Closure Notification Requirements

In accordance with ss. 292.12 and 292.13, Wis. Stats., you must notify the Department before making changes that affect or relate to the conditions of closure in this letter. For this case, examples of changed conditions requiring prior notification include, but are not limited to:

- Disturbance, construction on, change or removal in whole or part of pavement, an engineered cover or a soil barrier that must be maintained over contaminated soil

Please send written notifications in accordance with the above requirements to the Department's Milwaukee office at 2300 N. Dr. Martin Luther King Jr. Drive, Milwaukee, WI 53212, to the attention of Regional RR Program Associate.

The following DNR fact sheet, RR-819, "Continuing Obligations for Environmental Protection" has been included with this letter, to help explain a property owner's responsibility for continuing obligations on their property. If the fact sheet is lost, you may obtain a copy at <http://dnr.wi.gov/org/aw/rr/archives/pubs/RR819.pdf>.

Please be aware that the case may be reopened pursuant to s. NR 726.09, Wis. Adm. Code, if additional information regarding site conditions indicates that contamination on or from the site poses a threat to public health, safety, or welfare or to the environment.

The Department appreciates your efforts to restore the environment at this site. If you have any questions regarding this letter, please contact me at the letterhead address or (262) 574-2166.

Sincerely,

A handwritten signature in black ink, appearing to read "D. G. Volkert", with a long horizontal flourish extending to the right.

David G. Volkert, P.G.
Hydrogeologist
Bureau for Remediation & Redevelopment

Attachments

- Maintenance Plan
- RR 819

cc: Scott Prill, Reinhart, et al
Kerry Hardin, R.A. Smith National, Inc.
Matthew Dahlem, PSI
Bill Phelps DG/5 w/o attachments
SER File

BUILDING/CAP AND SOIL COVER BARRIER MAINTENANCE PLAN

September 29, 2011

Property Located at:

2000-2002 South West Avenue
Waukesha, Wisconsin
WDNR FID #: 268354570
WDNR BRRTS #: 02-68-552746

Legal Description:

Tax Key No.: WAKC1353424

Lot one (1) and Outlot one (1) of Certified Survey Map No. 10488, recorded December 21, 2007 in the office of the Register of Deeds for Waukesha County, Wisconsin as Document Number 3534066; being part of the Northeast $\frac{1}{4}$ of the Southwest $\frac{1}{4}$, the Southeast $\frac{1}{4}$ of the Northwest $\frac{1}{4}$, the Southwest $\frac{1}{4}$ of the Northeast $\frac{1}{4}$, and the Northwest $\frac{1}{4}$ of the Southeast $\frac{1}{4}$ of Section 15, Township 6 North, Range 19 East in the City of Waukesha, Waukesha County, Wisconsin.

Lot 1 is the Wal-Mart store and parking lot/drive-way/landscaped islands-lawn areas. Outlot 1 is the location of the storm-water pond. Lot 2 is the land for outlots that will be available for commercial development. Lot 2 has been covered with vegetation to prevent erosion until the property is developed and a permanent cap can be installed.

Introduction

This document is the Maintenance Plan for a building/cap and soil cover barrier on Lot 1 and Outlot 1 at the above-referenced property in accordance with the requirements of NR 724.13(2), Wisconsin Administrative Code (WAC). The maintenance activities relate to the existing 184,000± square foot Wal-Mart Supercenter structure and concrete/asphalt pavement and landscaped areas that are occupying the area over the contaminated soil and groundwater on-site.

More site-specific information about this property may be found in:

- The case file in the Wisconsin Department of Natural Resources (WDNR) Southeast Region regional office
- Bureau of Remediation and Redevelopment Tracking System (BRRTS) on the Web (WDNR's internet based data base of contaminated sites): <http://botw.dnr.state.wi.us/botw/SetUpBasicSearchForm.do>
- Geographic Information System (GIS) Registry PDF file for further information on the nature and extent of contamination: <http://dnrmapping.wisconsin.gov/imf/imfApplyTheme.jsp?index=1>; and
- The WDNR project manager for Waukesha County.

Description of Contamination

Soil contaminated by diesel range organics (DRO) and certain polycyclic aromatic hydrocarbons (PAHs) may be located at a depth of 0-2 feet below ground surface (bgs) at SP-3, SP-5, SP-8, and SP-14 in the northwest portion of the property. The source of the contamination is fill previously placed on the property. Additionally, approximately 1,505.52 tons of soil was removed from this area in July 2010 for off-site licensed landfill disposal. Groundwater contaminated by certain volatile organic compounds (VOCs), Resource Conservation and Recovery Act (RCRA) metals, and PAHs is located at a depth of 6-17 feet bgs at groundwater monitoring wells MW-1 through MW-4 at concentrations exceeding the Wisconsin Preventative Action Limits (PALs). The extent of the soil contamination is shown in the attached map (Exhibit A) and has not been fully defined; thus, the entire property has been capped.

Description of the Building/Cap and Soil Cover Barrier

The building/cap and soil cover barrier consists of the 184,000± square foot Wal-Mart Supercenter structure and concrete/asphalt covered parking lots and driveways that are occupying the area over the contaminated soil and groundwater on-site. The location of the building footprint/paved surface to be maintained in accordance with this Maintenance Plan is identified in the attached map (Exhibit B).

Twelve inches of topsoil was placed in the landscaped islands/planting beds/lawn areas on Lot 1. For the storm-water pond (Outlot 1), Wal-Mart placed 12-inches of topsoil outside the 100-year water level within the pond. Two feet of clay was placed below the water level of the pond. The topsoil on Lot 1 and Outlot 1 was vegetated with seeding and sod to prevent erosion and deterioration. In the areas not vegetated, the topsoil was covered by approximately 2.5-inches of bark/wood-chips, which is thick enough to prevent erosion and will be replaced as needed as it deteriorates.

Lot 2 was covered by sod for stabilization purposes until the outlots are planned for development. At that time, the developer of the outlots will work with the WDNR to determine the soil cover in the area to be developed.

Cover and Building Barrier Purpose

The building/paved surfaces/ landscaped islands-lawn areas over the contaminated soil will serve as a barrier to prevent direct human contact with residual soil contamination that might otherwise pose a threat to human health. The building and paved surfaces also act as an infiltration barrier to minimize future soil-to-groundwater contamination migration that would violate the groundwater standards in ch. NR 140, WAC. Based on the current and future use of the property, the barrier should function as intended unless disturbed.

Annual Inspection

The building/paved surfaces/landscaped islands-lawn areas overlying the contaminated soil will be inspected once a year, normally in the spring after all snow and ice is gone, for deterioration, cracks and other potential problems that can cause exposure to underlying soils. The inspections will be performed by the property owner or their designated representative. The inspections will be performed to evaluate damage due to settling, exposure to the weather, wear from traffic, increasing age and other factors. Any area where impacted soils have become or are likely to become exposed will be documented. A log of the inspections and any repairs will be maintained by the property owner and is included as Exhibit C, Cap Inspection Log. The log will include recommendations for necessary repair of any areas where underlying soils are exposed and where infiltration from the surface will not be effectively minimized. Once repairs are completed, they will be documented in the inspection log. A copy of the inspection log will be kept at the address of the property owner and available for submittal or inspection by WDNR representatives upon their request.

Maintenance Activities

If problems are noted during the annual inspections or at any other time during the year, repairs will be scheduled as soon as practical. Repairs can include patching and filling or larger resurfacing or construction operations. In the event that necessary maintenance activities expose the underlying soil, the owner must inform maintenance workers of the direct contact exposure hazard and provide them with appropriate personal protection equipment ("PPE"). The owner must also sample any soil that is excavated from the site prior to disposal to ascertain if contamination remains. The soil must be treated, stored and disposed of by the owner in accordance with applicable local, state and federal law.

In the event the building/paved surfaces/landscaped islands-lawn areas overlying the contaminated soil is removed or replaced, the replacement barrier must be equally impervious. Any replacement barrier will be subject to the same maintenance and inspection guidelines as outlined in this Maintenance Plan unless indicated otherwise by the WDNR or its successor.

The property owner, in order to maintain the integrity of the building/paved surfaces/landscaped islands-lawn areas, will maintain a copy of this Maintenance Plan on-site and make it available to all interested parties (i.e. on-site employees, contractors, future property owners, etc.) for viewing.

Prohibition of Activities and Notification of DNR Prior to Actions Affecting a Cover or Cap

The following activities are prohibited on any portion of the property where pavement, a building foundation, soil cover, engineered cap or other barrier is required as shown on the attached map, unless prior written approval has been obtained from the WDNR: 1) removal of the existing barrier; 2) replacement with another barrier; 3) excavating or

grading of the land surface; 4) filling on capped or paved areas; 5) plowing for agricultural cultivation; or 6) construction or placement of a building or other structure.

Amendment or Withdrawal of Maintenance Plan

This Maintenance Plan can be amended or withdrawn by the property owner and its successors with the written approval of WDNR.

**Contact Information
(as of September 2011)**

Site Owner and Operator: Wal-Mart Real Estate Business Trust
Mr. David Cox
2001 SE 10th Avenue
Bentonville, Arkansas 72716
(479) 273-4846

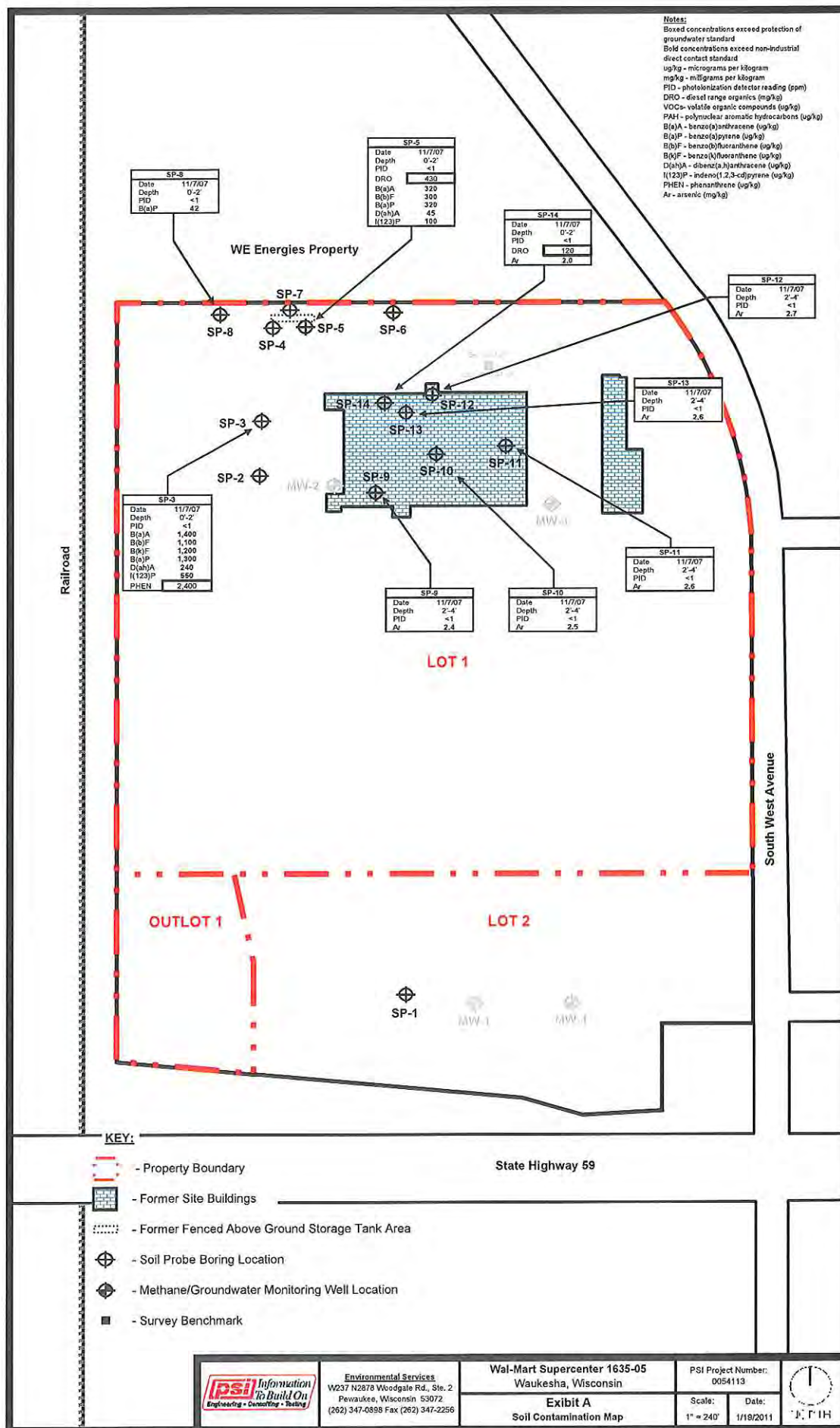
Local Contact: R. A. Smith National, Inc.
Ms. Kerry Hardin, PE
16745 West Bluemound Road
Brookfield, Wisconsin 53005-5938
(262) 781-1000

Consultant: Professional Service Industries, Inc.
W237 N2878 Woodgate Road
Suite 2
Pewaukee, Wisconsin 53072
(262) 347-0898

WDNR: Mr. Dave Volkert
Hydrogeologist
Southeast Region Remediation and Redevelopment
Program
Wisconsin Department of Natural Resources
141 NW Barstow St, Room 180
Waukesha WI 53188
(262) 574-2166

EXHIBIT A

(NO TEXT FOR THIS PAGE)



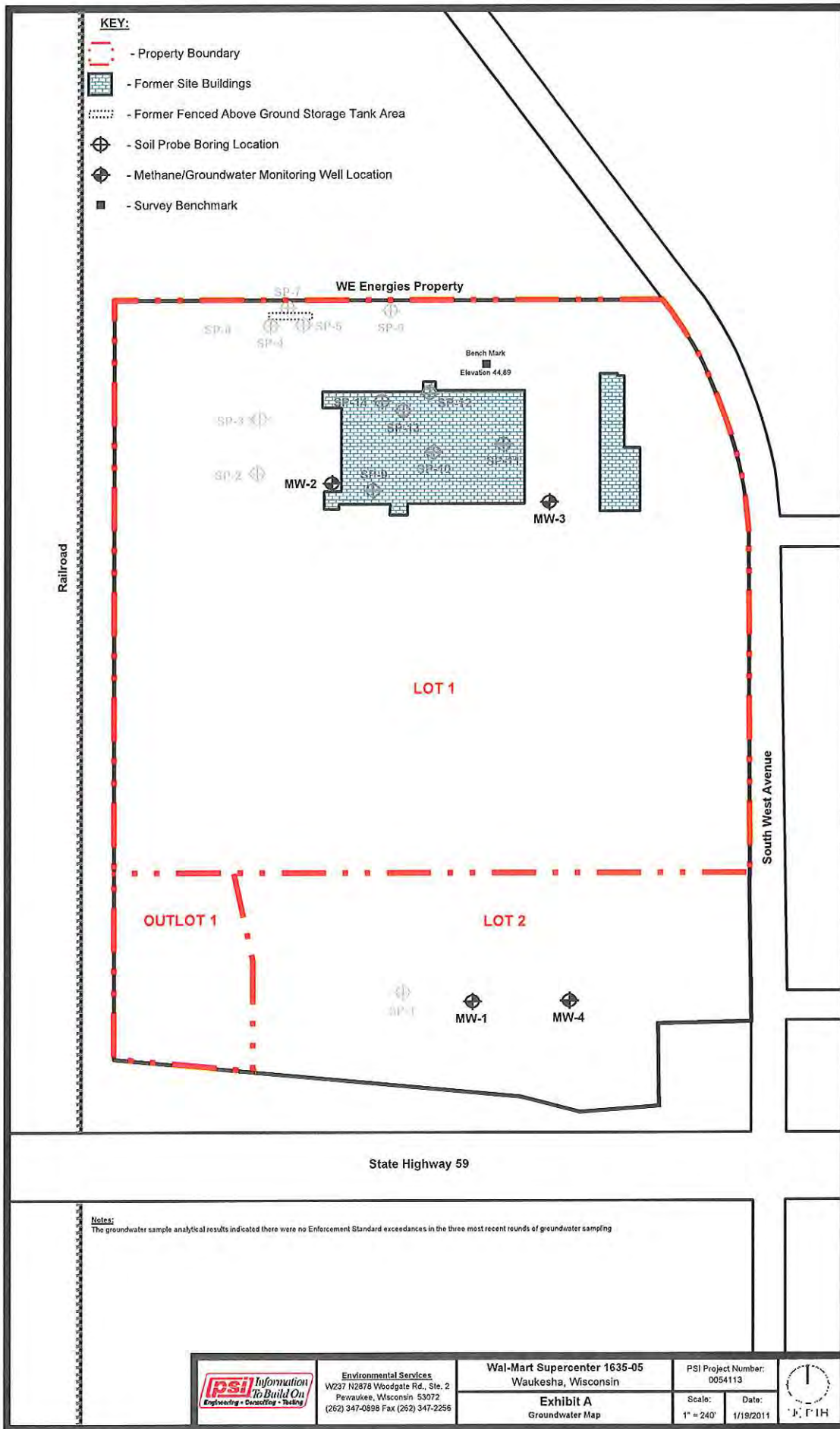
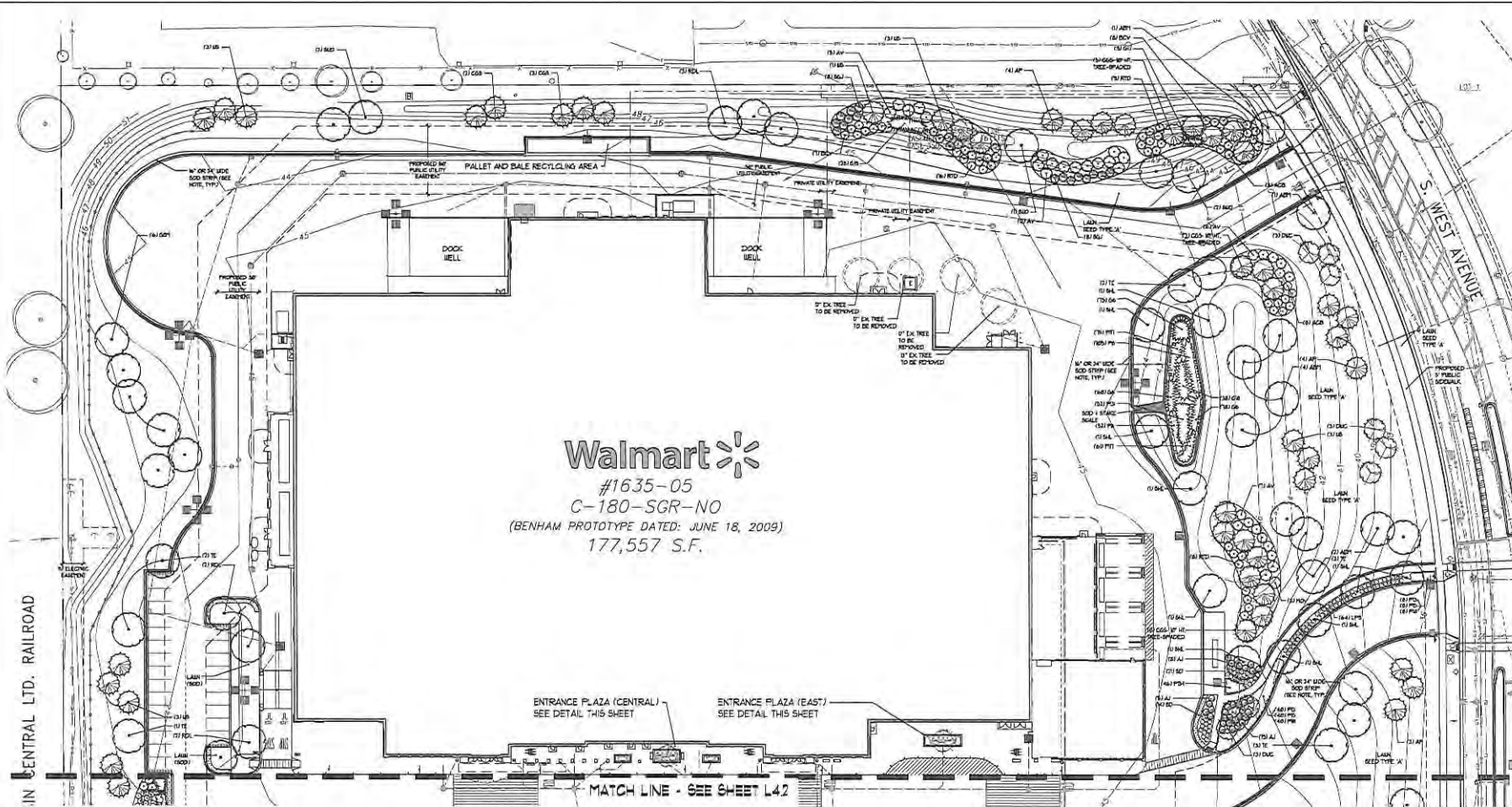


EXHIBIT B

(NO TEXT FOR THIS PAGE)



Walmart
 #1635-05
 C-180-SGR-NO
 (BENHAM PROTOTYPE DATED: JUNE 18, 2009)
 177,557 S.F.

PLANT MATERIAL SCHEDULE - THIS SHEET

SHADE TREES

ITEM	DESCRIPTION	QUANTITY	REMARKS
101	10' OR 12' BLUE PINE	10	10' OR 12' BLUE PINE
102	10' OR 12' WHITE PINE	10	10' OR 12' WHITE PINE
103	10' OR 12' RED PINE	10	10' OR 12' RED PINE
104	10' OR 12' LARCH	10	10' OR 12' LARCH
105	10' OR 12' SPRUCE	10	10' OR 12' SPRUCE
106	10' OR 12' FIR	10	10' OR 12' FIR
107	10' OR 12' PINE	10	10' OR 12' PINE
108	10' OR 12' CEDAR	10	10' OR 12' CEDAR
109	10' OR 12' JUNIPER	10	10' OR 12' JUNIPER
110	10' OR 12' YEW	10	10' OR 12' YEW

ORNAMENTAL TREES

ITEM	DESCRIPTION	QUANTITY	REMARKS
111	10' OR 12' PINE	10	10' OR 12' PINE
112	10' OR 12' CEDAR	10	10' OR 12' CEDAR
113	10' OR 12' JUNIPER	10	10' OR 12' JUNIPER
114	10' OR 12' YEW	10	10' OR 12' YEW

EVERGREEN TREES

ITEM	DESCRIPTION	QUANTITY	REMARKS
115	10' OR 12' PINE	10	10' OR 12' PINE
116	10' OR 12' CEDAR	10	10' OR 12' CEDAR
117	10' OR 12' JUNIPER	10	10' OR 12' JUNIPER
118	10' OR 12' YEW	10	10' OR 12' YEW

SHRUBS

ITEM	DESCRIPTION	QUANTITY	REMARKS
119	10' OR 12' PINE	10	10' OR 12' PINE
120	10' OR 12' CEDAR	10	10' OR 12' CEDAR
121	10' OR 12' JUNIPER	10	10' OR 12' JUNIPER
122	10' OR 12' YEW	10	10' OR 12' YEW

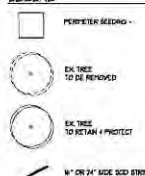
ORNAMENTAL GRASSES

ITEM	DESCRIPTION	QUANTITY	REMARKS
123	10' OR 12' PINE	10	10' OR 12' PINE
124	10' OR 12' CEDAR	10	10' OR 12' CEDAR
125	10' OR 12' JUNIPER	10	10' OR 12' JUNIPER
126	10' OR 12' YEW	10	10' OR 12' YEW

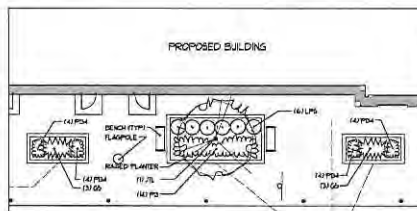
PERENNIALS

ITEM	DESCRIPTION	QUANTITY	REMARKS
127	10' OR 12' PINE	10	10' OR 12' PINE
128	10' OR 12' CEDAR	10	10' OR 12' CEDAR
129	10' OR 12' JUNIPER	10	10' OR 12' JUNIPER
130	10' OR 12' YEW	10	10' OR 12' YEW

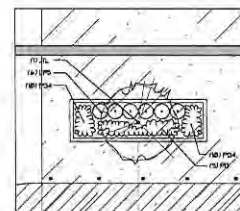
LEGEND



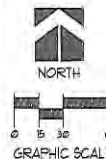
- NOTES:
1. ALL PLANTING SHALL BE RECEIVED BY 10' OR 12' BARE ROOT PLANTS.
 2. IF EXISTING TREES ARE TO BE REMOVED, ALL CONCRETE FOUNDATIONS SHALL BE REMOVED AND REPLACED WITH NEW CONCRETE.



ENTRANCE PLAZA CENTRAL DETAIL
SCALE: 1" = 10'-0"



ENTRANCE PLAZA EAST DETAIL
SCALE: 1" = 10'-0"



ALL INFORMATION CONTAINED ON THIS SHEET IS THE PROPERTY OF R.A. SMITH NATIONAL. THE PREPARATION, DISTRIBUTION, REPRODUCTION, AND USE OF ALL OR ANY PART OF THIS INFORMATION IS RESTRICTED TO THE PROJECT AREA ONLY AND NOT BE LOANED, REPRODUCED, COPIED, OR IN ANY MANNER USED FOR ANY OTHER PROJECT WITHOUT THE WRITTEN PERMISSION OF R.A. SMITH NATIONAL.

THE LOCATION OF EXISTING UTILITY INSTALLATIONS AS SHOWN ON THIS PLAN ARE APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES.

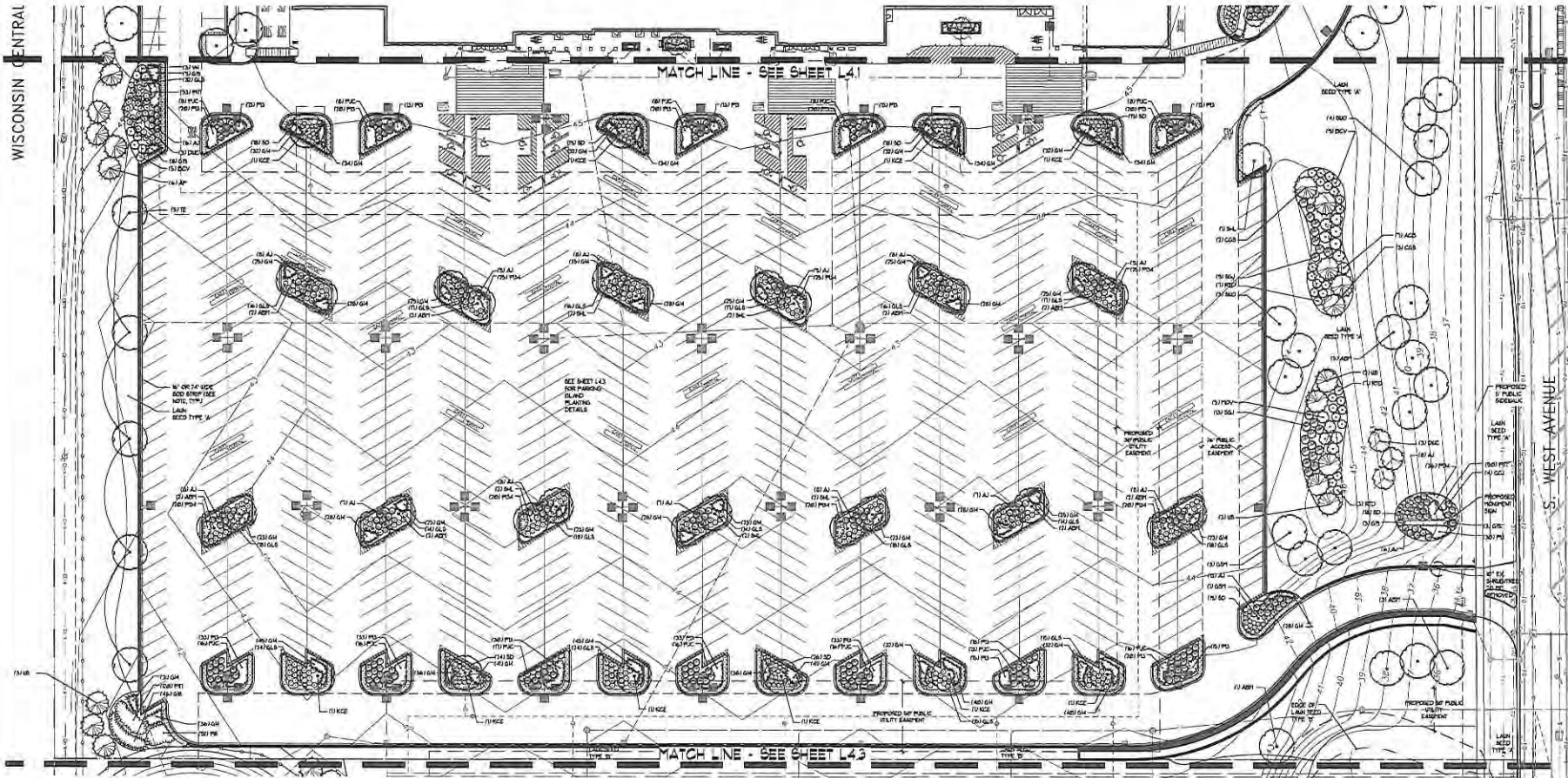
R.A. SMITH NATIONAL ASSUMES NO RESPONSIBILITY FOR DAMAGES, LIABILITY OR COSTS RESULTING FROM CHANGES OR ALTERATIONS MADE TO THIS PLAN WITHOUT THE EXPRESS WRITTEN CONSENT OF R.A. SMITH NATIONAL.

WALMART #1635-05
CITY OF WAUKESHA, WI
LANDSCAPE PLAN
NORTH

R.A. Smith National
Beyond Surveying
and Engineering
1744 W. Hammond Road, Waukesha, WI 53086-3333
262.531.0000 Fax 262.531.0001 www.ra-smith.com

DATE: _____
DESCRIPTION: _____

PROJECT MANAGER: _____
DESIGNED BY: _____
CHECKED BY: _____
SHEET NUMBER: **L4.1**



PLANT MATERIAL SCHEDULE - THIS SHEET

SHADE TREES

QTY	ITEM	DESCRIPTION	SIZE	NOTES
101	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 101)
102	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 102)
103	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 103)
104	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 104)
105	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 105)
106	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 106)
107	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 107)
108	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 108)
109	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 109)
110	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 110)

ORNAMENTAL TREES

QTY	ITEM	DESCRIPTION	SIZE	NOTES
111	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 111)
112	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 112)
113	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 113)
114	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 114)
115	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 115)
116	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 116)
117	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 117)
118	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 118)
119	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 119)
120	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 120)

EVERGREEN TREES

QTY	ITEM	DESCRIPTION	SIZE	NOTES
121	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 121)
122	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 122)
123	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 123)
124	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 124)
125	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 125)
126	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 126)
127	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 127)
128	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 128)
129	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 129)
130	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 130)

SHRUBS

QTY	ITEM	DESCRIPTION	SIZE	NOTES
131	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 131)
132	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 132)
133	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 133)
134	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 134)
135	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 135)
136	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 136)
137	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 137)
138	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 138)
139	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 139)
140	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 140)

ORNAMENTAL GRASSES

QTY	ITEM	DESCRIPTION	SIZE	NOTES
141	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 141)
142	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 142)
143	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 143)
144	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 144)
145	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 145)
146	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 146)
147	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 147)
148	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 148)
149	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 149)
150	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 150)

PERENNIALS

QTY	ITEM	DESCRIPTION	SIZE	NOTES
151	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 151)
152	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 152)
153	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 153)
154	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 154)
155	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 155)
156	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 156)
157	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 157)
158	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 158)
159	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 159)
160	10'	RED BUD	10'	10' OR 14' DECIDUOUS BUSHES (SEE DETAIL 160)

LEGEND



NOTES:
1. ALL PLANTING BEDS WILL RECEIVE 2" OF SWEETWOOD HARDWOOD BARK FILL.
2. 10' BUSH PLANTING STRIP IS REQUIRED BEHIND ALL CONCRETE DRIVEWAYS. THESE STRIPS WILL BE ESTABLISHED ADJACENT TO CONCRETE DRIVEWAYS. SINCE A 10' OR 14' DECIDUOUS BUSH STRIP IS REQUIRED.



ALL INFORMATION CONTAINED ON THIS SHEET IS THE PROPERTY OF R.A. SMITH NATIONAL. THE POSSESSION, DISTRIBUTION, REPRODUCTION, AND USE OF ALL OR ANY PART OF THIS INFORMATION IS RESTRICTED AS SET FORTH IN THE CONTRACTUAL TERMS AND CONDITIONS ESTABLISHED BETWEEN R.A. SMITH NATIONAL AND THEIR CLIENT FOR THIS PROJECT. REPRODUCTION OR USE OF ANY PART BY ANY PERSON WITHOUT THE PERMISSION OF R.A. SMITH NATIONAL IS PROHIBITED. ©COPYRIGHT 2008 R.A. SMITH NATIONAL 10745 WEST BLUENDORF ROAD, SUITE 200 BROOKFIELD, IL 60005

THE LOCATIONS OF EXISTING UTILITY INSTALLATIONS AS SHOWN ON THIS PLAN ARE APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES.

R.A. SMITH NATIONAL ASSUMES NO RESPONSIBILITY FOR DAMAGES, LIABILITY OR COSTS RESULTING FROM CHANGES OR ALTERATIONS MADE TO THIS PLAN WITHOUT THE EXPRESSED WRITTEN CONSENT OF R.A. SMITH NATIONAL.

DESCRIPTION
DATE

R.A. Smith National
Beyond Surveying
and Engineering
10745 West Bluendorf Road, Suite 200
Brookfield, IL 60005
312.231.0000 Fax 312.714.4444 www.ra-smith.com

WALMART #1635-05
CITY OF WAUKESHA, WI
LANDSCAPE PLAN
CENTRAL

©COPYRIGHT 2008
R.A. SMITH NATIONAL, INC.
DATE: 05-20-09
SCALE: 1" = 30'
JOB NO 3585745
PROJECT MANAGER:
KERRY C. HARRON, P.E.
DESIGNED BY: ALS
CHECKED BY: CHS
SHEET NUMBER
L4.2

(NO TEXT FOR THIS PAGE)

EXHIBIT C

(NO TEXT FOR THIS PAGE)

EXHIBIT C

BARRIER INSPECTION LOG

[illegible]

(NO TEXT FOR THIS PAGE)

000105 DEC 18 8



WC3615331-005

DOCUMENT NO.

WARRANTY DEED

This Deed, made between **HWY 59 WEST LIMITED PARTNERSHIP**, a Wisconsin limited partnership ("Grantor"), and **WAL-MART REAL ESTATE BUSINESS TRUST**, a Delaware statutory trust ("Grantee").

WITNESSETH, that the said Grantor, for valuable consideration conveys to Grantee the following described real estate in Waukesha County, State of Wisconsin:

See Exhibit A for legal description of the real estate conveyed (the "Property").

Together with all and singular hereditaments and appurtenances thereunto belonging.

This is not homestead property.

And the Grantor warrants that the title is good, indefeasible in fee simple and free and clear of liens and encumbrances except for those items listed on Exhibit B and will warrant and defend the same.

Dated as of the 10 day of December, 2008.

HWY 59 WEST LIMITED PARTNERSHIP,
a Wisconsin limited partnership

By: **HWY 59 WEST (GP), INC.**,
a Wisconsin corporation

Its: General Partner

By: 

Name:

Its: Robert A. Patch, President

[authentication/acknowledgment located on following page]

Drafted by: Joseph M. Judge, Esq.

3615331

REGISTER'S OFFICE
WAUKESHA COUNTY, WI
RECORDED ON

12-18-2008 10:48 AM

MICHAEL J. HASSLINGER
REGISTER OF DEEDS

REC. FEE: 12.00
REC. FEE-CO: 5.00
REC. FEE-ST: 2.00
TRAN. FEE: 4950.00
TRAN. FEE-STAT: 19800.00
PAGES: 5

THIS SPACE RESERVED FOR RECORDING DATA

NAME AND RETURN ADDRESS
Waukesha, WI / Store No. 1635-05
Joseph M. Judge, Esq.
Dawda, Mann, Mulcahy & Sadler,
PLC
39533 Woodward Avenue
Suite 200
Bloomfield Hills, MI 48304-5103

WAKC 1353424 & WAKC
1353425

Parcel Identification Number

TRANSFER
\$24,750.00
FEE

7/5

000106 DEC 18 2008

AUTHENTICATION (Signatures may be authenticated or acknowledged. Both are not necessary.)

Signature(s) Robert A. Betch

Authenticated this 10th day of December, 2008.

Signature Peter McInch

Type or Print Name

TITLE: MEMBER OF STATE BAR OF WISCONSIN

(if not, _____ authorized by §7606.06, Wis. Stats.)

ACKNOWLEDGMENT

STATE OF WISCONSIN

_____ COUNTY

Personally came before me this _____ day of December, 2008 the above-named _____, to me known to be the person(s) who executed the foregoing instrument and acknowledge the same.

Signature _____

Type or Print Name _____

Notary Public, _____ County, Wisconsin

My commission is permanent (If not, state expiration date: _____).

* Names of persons signing in any capacity should be typed or printed below their signatures

000107 DEC 18 2007

EXHIBIT A

Lots one (1) and two (2) and Outlot one (1) of Certified Survey Map No. 10488, recorded December 21, 2007 in the office of the Register of Deeds for Waukesha County, Wisconsin as Document Number 3534066; being part of Lot 1, Block 13, in Sunset Heights Subdivision, being a part of the Northeast 1/4 of the Southwest 1/4, the Southeast 1/4 of the Northwest 1/4, the Southwest 1/4 of the Northeast 1/4, and the Northwest 1/4 of the Southeast 1/4 of Section 15, Township 6 North, Range 19 East, in the City of Waukesha, Waukesha County, Wisconsin.

EXHIBIT B

Permitted Exceptions

1. Special taxes or assessments not yet due and payable.
2. Thirty (30) foot utility easement affecting the Property as shown on the recorded plat of Sunset Heights Subdivision. The easement interest held by the City of Waukesha in the thirty (30) foot utility easement was transferred to the State of Wisconsin, Department of Transportation pursuant to Quit Claim Deed recorded March 24, 1997 in Reel 2406, Image 448 as Document Number 2199186.
3. Utility easement granted to Wisconsin Electric Power Company and conditions as set forth in instrument recorded December 17, 1957 in Volume 759, Page 252 as Document Number 470642.
4. Obligations as set forth in Warranty Deed recorded February 5, 1964 in Volume 971, Page 108 as Document Number 604446.
5. Utility easement granted to Wisconsin Electric Power Company and Wisconsin Telephone Company and conditions as set forth in instrument recorded May 22, 1964 as Document Number 611151 and as shown on Certified Survey Map No. 10488, recorded December 21, 2007 as Document Number 3534066.
6. Apparent easement for overhead electric line running along the westerly boundary of the Property as disclosed on ALTA/ACSM Land Title Survey prepared by National Survey & Engineering, Eric R. Sturm, R.L.S. dated December 13, 2007 as Survey No. 163753-DAW.
7. Waukesha County Preliminary Floodway Area affecting the Property as shown on ALTA/ACSM Land Title Survey prepared by National Survey & Engineering, Eric R. Sturm, R.L.S. dated December 13, 2007 as Survey No. 163753-DAW.
8. Rights of the public, if any, in that portion of the Premises which lies below the normal highwater mark of the tributary of Pebble Creek, which crosses the southern boundary of Lot 2 of Certified Survey Map No. 10488.
9. The following matters as shown on Certified Survey Map No. 10488, recorded December 21, 2007 as Document No. 3534066:
 - (a) Shoreland Jurisdiction Line.
 - (b) Access Easement over Lot 1 for the benefit of Lot 2 and granted to the City of Waukesha for access to drainage easement (Outlot 1).
 - (c) 30' Public Utility Easement (Doc. No. 2199186).
 - (d) Outlot 1 is a drainage easement for the benefit of Lots 1 and 2.
 - (e) Ordinary highwater line of tributary to Pebble Creek.

000109 DEC 18 8

- (f) Zone A2 per REMA Map Community Panel Number 550-491-0006B effective Sept. 2, 1982.
- (g) NOTE: Outlot 1 shall be owned and maintained by Lot 1. Outlot 1 is drainage easement for benefit of Lots 1 and 2 and access easement granted to City of Waukesha.
- (h) Public utility easement granted to City of Waukesha.
- (i) Temporary 10' sidewalk slope easement granted to the City of Waukesha along street frontage of all lots. Said easement to be released upon completion of walk construction.
- (j) Notes as set forth on sheets 3 and 4 of 9.
- (k) Public utility easement granted to Waukesha Water Utility.
- (l) Wetlands as flagged by Natural Resource Consulting, August 2007.
- (m) Drainage easement granted to the City of Waukesha.



CERTIFIED SURVEY MAP NO. 10488

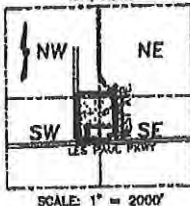
① DEDICATED TO
PUBLIC FOR
RIGHT OF WAY
PURPOSES

-
- LEGEND**
- INDICATES CONCRETE MONUMENT W/BRASS CAP FOUND
 - INDICATES 1" IRON PIPE (FOUND), UNLESS NOTED
 - INDICATES SET 1.315" O.D. IRON PIPE AT LEAST 18" IN LENGTH, 1.68 LBS. PER LINEAL FOOT.
 - INDICATES PIPE NOT SET, FALLS IN WATER
- PARCEL 1**
CSM 15561
- PARCEL 2**
CSM 15562
- PARCEL 3**
CSM 15563
- PARCEL 4**
CSM 15564
- PARCEL 5**
CSM 15565
- PARCEL 6**
CSM 15566
- PARCEL 7**
CSM 15567
- PARCEL 8**
CSM 15568
- PARCEL 9**
CSM 15569
- PARCEL 10**
CSM 15570
- PARCEL 11**
CSM 15571
- PARCEL 12**
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CSM 15703
- PARCEL 144**
CSM 15704
- PARCEL 145**
CSM

ORDINARY HIGHWATER
LINE OF TRIBUTARY
TO PEBBLE CREEK
VICINITY MAP
SECTION 15
T8N. R19E

ALL DIMENSIONS SHOWN ARE MEASURED TO THE NEAREST HUNDREDTH OF A FOOT. BEARINGS ARE REFERENCED TO GRID NORTH OF THE WISCONSIN COORDINATE SYSTEM, SOUTH ZONE (NAD'27). THE EAST LINE OF THE NW 1/4 OF SECTION 15 HAS A BEARING OF S00°05'51"E

GRAPHIC SCALE



SCALE: 1" = 2000'

(IN FEET)
1 inch = 200 ft.

LES PAUL PKWY STH 58
(OTHER RIGHT-OF-WAY WIDTH VARIES)

National Survey & Engineering

A Division of R.A. Smith & Associates, Inc.

262-781-1000
Fax 262-797-7373
16745 W. Bluemound Road
Suite 300
Brookfield, WI 53005-5938
www.nsac.com

8. 5163741 dwp

SHEET 1 OF 9 SHEETS

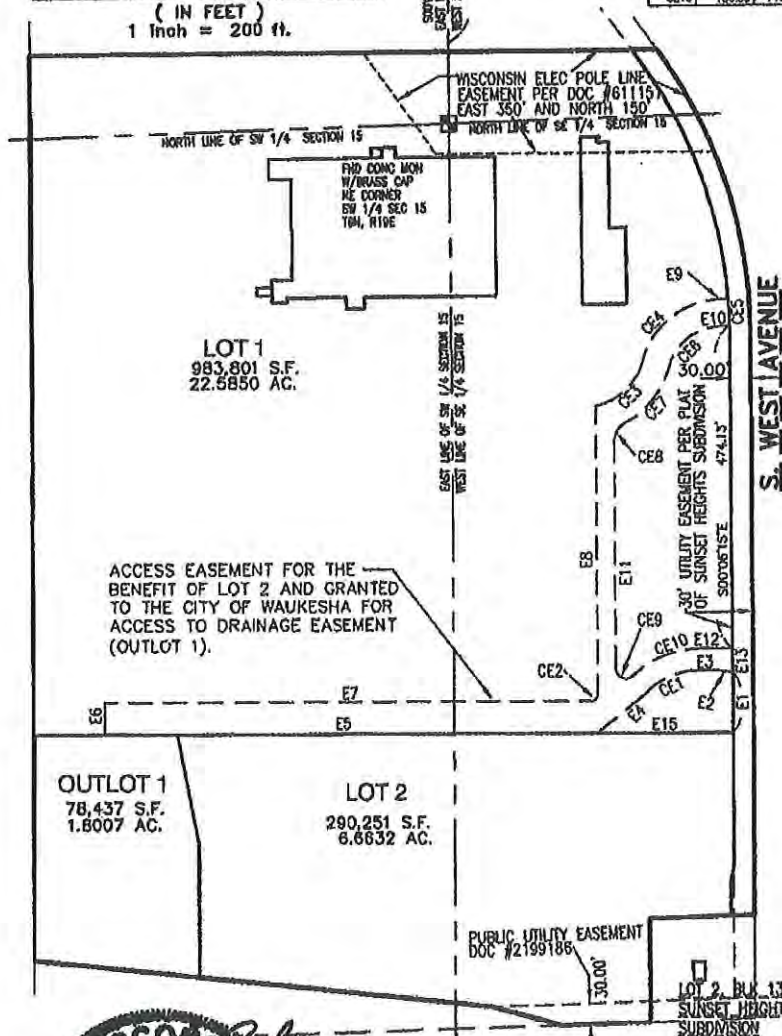
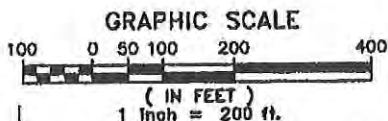
CERTIFIED SURVEY MAP NO. 10483

ACCESS EASEMENT DETAIL SHEET

Part of Lot 1, Block 13, in Sunset Heights Subdivision, being a part of the Northeast 1/4 of the Southwest 1/4, the Southeast 1/4 of the Northwest 1/4, the Southwest 1/4 of the Northeast 1/4, and the Northwest 1/4 of the Southeast 1/4 of Section 15, Town 6 North, Range 19 East, in the City of Waukesha, Waukesha County, Wisconsin.

FND CONC MON
W/BRASS CAP
WESTERLY WITNESS
MONUMENT
NE CORNER, NW 1/4
SEC 15, T6N, R19E

CURVE	LENGTH	RADIUS	DELTA	CHORD	CHORD BRG
CE1	90.31	109.50	47°15'20"	67.77	S85°12'07"W
CE2	14.82	9.50	82°32'55"	13.43	N44°38'46"E
CE3	99.93	90.50	83°18'05"	74.93	N45°40'33"E
CE4	163.26	119.50	73°28'59"	142.97	N50°47'18"E
CE5	39.01	685.93	3°15'36"	39.00	N02°28'12"W
CE6	103.24	80.60	73°28'58"	66.31	S50°47'19"W
CE7	107.70	128.60	47°38'56"	104.62	S37°52'18"W
CE8	31.78	29.30	61°42'58"	30.26	S30°50'17"W
CE9	33.84	14.60	133°44'08"	26.67	S68°53'28"E
CE10	106.80	140.50	43°35'17"	104.33	N88°02'08"E



LINE	LENGTH	BEARING
E1	86.19	N00°05'30"W
E2	21.87	N78°31'37"W
E3	24.95	S89°49'47"W
E4	86.70	S50°38'13"W
E5	710.14	S82°58'48"W
E6	46.49	N00°01'12"W
E7	700.68	N89°58'44"E
E8	421.58	N00°01'11"W
E9	12.63	N87°31'48"E
E10	12.63	N87°31'48"E
E11	332.83	S00°01'11"E
E12	46.44	S89°49'47"W
E13	35.29	S00°05'50"E
E14	102.03	S88°58'48"W
E15	193.90	S89°58'48"W



NOTE: OUTLOT 1 SHALL BE OWNED AND MAINTAINED BY LOT 1. OUTLOT 1 IS DRAINAGE EASEMENT FOR BENEFIT OF LOTS 1 AND 2 AND ACCESS EASEMENT GRANTED TO THE CITY OF WAUKESHA

LES PAUL PKWY STE 59

National Survey & Engineering

A Division of R.A. Smith & Associates, Inc.

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Suite 200
Brookfield, WI 53005-5938
www.nse.com

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CS1000.dwg/CS1002.dwg

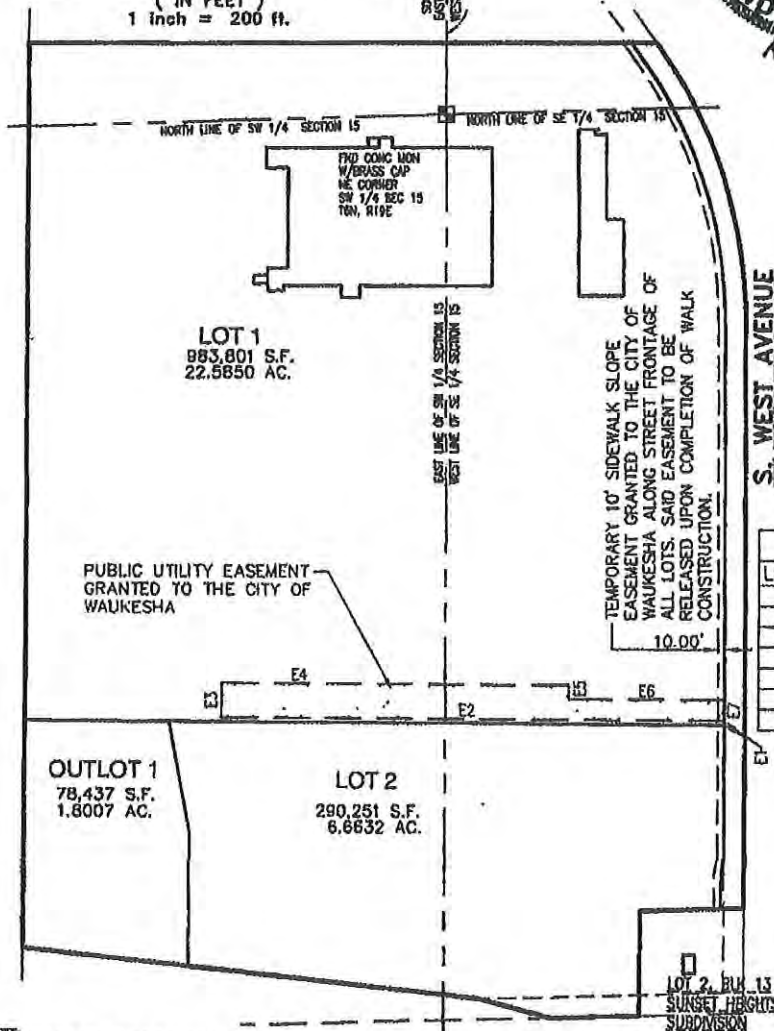
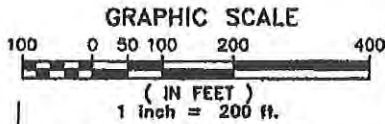
SHEET 2 OF 9 SHEETS

CERTIFIED SURVEY MAP NO. 10488

CITY OF WAUKESHA UTILITY EASEMENT DETAIL SHEET

Part of Lot 1, Block 13, in Sunset Heights Subdivision, being a part of the Northeast 1/4 of the Southwest 1/4, the Southeast 1/4 of the Northwest 1/4, the Southwest 1/4 of the Northeast 1/4, and the Northwest 1/4 of the Southeast 1/4 of Section 15, Town 6 North, Range 19 East, in the City of Waukesha, Waukesha County, Wisconsin.

FND CONC MON
W/BRASS CAP
WESTERLY WITNESS
MONUMENT
NE CORNER, NW 1/4
SEC 15, T6N, R19E



LINE TABLE		
LINE	LENGTH	BEARING
E1	5.51	N00°05'50\"W
E2	727.43	S89°58'48\"W
E3	50.00	N00°01'12\"W
E4	503.08	N89°58'48\"E
E5	20.00	S00°01'12\"E
E6	224.33	N89°58'48\"E
E7	30.00	S00°05'50\"E

- NOTES:**
1. A TEMPORARY 10' WIDE SLOPE EASEMENT SHALL BE IN EFFECT ALONG THE STREET FRONTAGE OF ALL LOTS. SAID EASEMENT NOT TO BE PERMANENTLY IMPROVED AND TO BE IN EFFECT UNTIL SIDEWALK IS INSTALLED.
 2. NO BUILDING OR FENCE SHALL BE CONSTRUCTED IN SANITARY SEWER, STORM SEWER, DRAINAGE AND WATER MAIN EASEMENTS. NO TREES OR SHRUBS WHICH WOULD GROW TO MORE THAN 4' IN HEIGHT SHALL BE PLANTED WITHIN SAID EASEMENT WITHOUT APPROVAL OF THE CITY OF WAUKESHA ENGINEERING DEPARTMENT AND THE WAUKESHA WATER UTILITY.
 3. IN THE EVENT THE WATER UTILITY FINDS IT NECESSARY TO DISTURB THE PREMISES IN THE EXERCISE OF ITS DUTIES AND RESPONSIBILITIES (UTILITY REPAIRS, IF NECESSARY), THE UTILITY AGREES TO RESTORE THE PREMISES OF THE GRANTEE, AS NEARLY AS IS REASONABLY POSSIBLE, TO THE CONDITION EXISTING PRIOR TO SUCH DISTURBANCE. HOWEVER, NOT INCLUDING THE REPLACEMENT OF PAVEMENT, TREES, SHRUBBERY AND OTHER ITEMS EXISTING ON OR WITHIN THE DESCRIBED EASEMENT.
 4. GRADE CHANGES WITHIN THE PERMANENT WATER MAIN EASEMENTS WHICH EXCEED 18\" (ONE FOOT) SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE WAUKESHA WATER UTILITY.

LES PAUL PKWY STH 59

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Engineering**

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262-781-1000
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16745 W. Bluemound Road
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Brookfield, WI 53005-5938
www.nsae.com

S: 5163753.dwg.
CS100.dwg CS101L2H
SHEET 3 OF 9 SHEETS

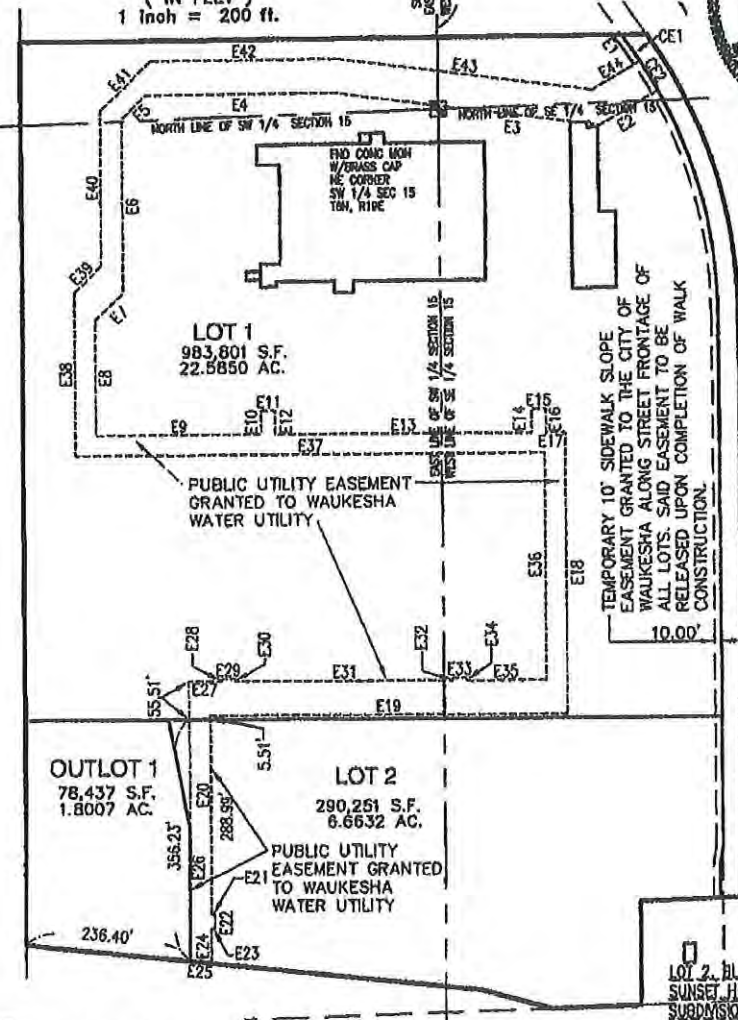
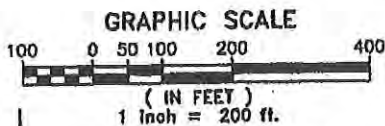
CERTIFIED SURVEY MAP NO. 10488

WAUKESHA WATER UTILITY EASEMENT DETAIL SHEET

Part of Lot 1, Block 13, in Sunset Heights Subdivision, being a part of the Northeast 1/4 of the Southwest 1/4, the Southeast 1/4 of the Northwest 1/4, the Southwest 1/4 of the Northeast 1/4, and the Northwest 1/4 of the Southeast 1/4 of Section 15, Town 6 North, Range 19 East, in the City of Waukesha, Waukesha County, Wisconsin.

FND CONC MON
W/BRASS CAP
WESTERLY WITNESS
MONUMENT
NE CORNER, NW 1/4
SEC 15, T6N, R19E

CURVE	LENGTH	RADIUS	DELTA	CHORD	CHORD BRG
CE1	28.08	685.53	2°10'51"	28.09	S14°00'25"E
CE2	50.01	685.53	4°10'48"	50.00	S37°49'34"E



LINE	LENGTH	BEARING
E1	21.01	N35°05'50"W
E2	98.33	S59°31'03"W
E3	387.28	N82°28'52"W
E4	273.10	N80°00'00"W
E5	49.29	S45°00'00"E
E6	266.93	S00°00'00"E
E7	55.51	S45°00'00"E
E8	170.57	S00°00'00"E
E9	236.91	N89°58'48"E
E10	34.96	N00°01'12"W
E11	20.00	N89°58'48"E
E12	34.96	S00°01'12"E
E13	372.47	N89°58'48"E
E14	35.00	N00°01'12"W
E15	20.00	N89°58'48"E
E16	35.00	S00°01'12"E
E17	27.53	N89°58'48"E
E18	410.28	S00°01'12"E
E19	516.67	S89°58'48"W
E20	204.50	S00°01'12"E
E21	3.00	N89°58'48"E
E22	20.00	S00°01'12"E
E23	5.00	S89°58'48"W
E24	60.32	S00°01'12"E
E25	30.16	N84°08'21"W
E26	411.73	N00°01'12"W
E27	45.63	N89°58'48"E
E28	3.49	N00°01'12"W
E29	20.00	N89°58'48"E
E30	3.49	S00°01'12"E
E31	316.01	N89°58'48"E
E32	3.49	N00°01'12"W
E33	20.00	N89°58'48"E
E34	3.49	S00°01'12"E
E35	115.03	N89°58'48"E
E36	330.28	N00°01'12"W
E37	676.83	S89°58'48"W
E38	241.29	N00°00'00"E
E39	65.81	N45°00'00"E
E40	227.67	N00°00'00"E
E41	102.42	N45°00'00"E
E42	268.83	S80°00'00"E
E43	373.32	S82°26'52"E
E44	80.80	N69°31'03"E

- NOTES:
1. A TEMPORARY 10' WIDE EASEMENT SHALL BE IN EFFECT ALONG THE STREET FRONTAGE OF ALL LOTS. SAID EASEMENT NOT TO BE PERMANENTLY IMPROVED AND TO BE IN EFFECT UNTIL SIDEWALK IS INSTALLED.
 2. NO BUILDING OR FENCE SHALL BE CONSTRUCTED IN SANITARY SEWER, STORM SEWER, DRAINAGE AND WATER MAIN EASEMENTS. NO TREES OR BUSHES WHICH WOULD GROW TO MORE THAN 4' IN HEIGHT SHALL BE PLANTED WITHIN SAID EASEMENT WITHOUT APPROVAL OF THE CITY OF WAUKESHA ENGINEERING DEPARTMENT AND THE WAUKESHA WATER UTILITY.
 3. IN THE EVENT THE WATER UTILITY FINDS IT NECESSARY TO DISTURB THE PREMISES IN THE EXERCISE OF ITS DUTIES AND RESPONSIBILITIES (FUTURE REPAIRS, IF NECESSARY), THE UTILITY AGREES TO RESTORE THE PREMISES OF THE GRANTEE, AS NEARLY AS IS REASONABLY POSSIBLE, TO THE CONDITION EXISTING PRIOR TO SUCH DISTURBANCE, HOWEVER, NOT INCLUDING THE REPLACEMENT OF PLANTING, TREES, SHRUBBERY AND OTHER TREES EXISTING ON OR WITHIN THE DESCRIBED EASEMENT.
 4. GRADE CHANGES WITHIN THE PERMANENT WATER MAIN EASEMENTS WHICH EXCEED 12" (ONE FOOT) SHALL NOT BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE WAUKESHA WATER UTILITY.

LES PAUL PKWY STL 52

**National
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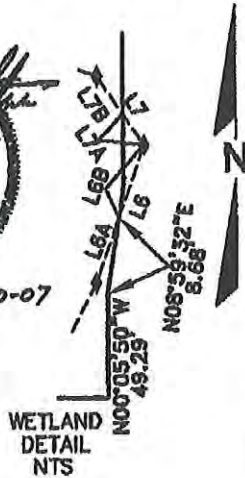
262-781-1000
Fax 262-797-7373
16745 W. Bluemound Road
Suite 200
Brookfield, WI 53005-5938
www.nsae.com

S: 3141753.dwg
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SHEET 4 OF 9 SHEETS

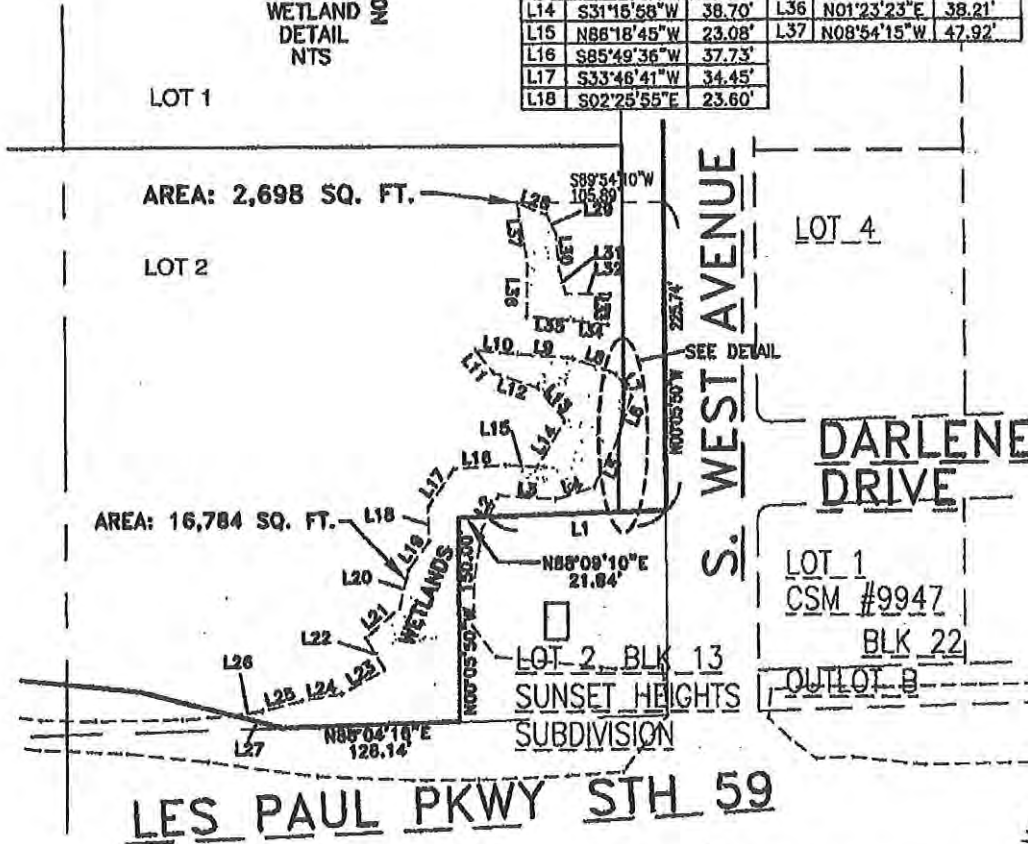
CERTIFIED SURVEY MAP NO. 10488

WETLAND DETAIL SHEET

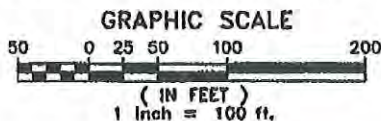
Part of Lot 1, Block 13, in Sunset Heights Subdivision, being a part of the Northeast 1/4 of the Southwest 1/4, the Southeast 1/4 of the Northwest 1/4, the Southwest 1/4 of the Northeast 1/4, and the Northwest 1/4 of the Southeast 1/4 of Section 15, Town 6 North, Range 19 East, in the City of Waukesha, Waukesha County, Wisconsin.



LINE	BEARING	LENGTH	LINE	BEARING	LENGTH
L1	S88°09'10\"W	128.16'	L19	S35°03'44\"W	26.21'
L2	N27°19'47\"E	16.91'	L20	S13°16'43\"W	27.77'
L3	S88°12'11\"E	41.02'	L21	S47°09'36\"W	33.71'
L4	N72°34'19\"E	29.21'	L22	S30°29'58\"E	26.93'
L5	N28°48'26\"E	35.11'	L23	S60°29'06\"W	35.73'
L6	N19°15'52\"E	35.62'	L24	S80°08'55\"W	29.08'
L6A	N19°15'52\"E	0.01'	L25	S75°03'44\"W	29.64'
L6B	N19°15'52\"E	26.61'	L26	S80°58'31\"W	21.30'
L7	N34°13'13\"W	19.96'	L27	S75°13'47\"E	36.84'
L7A	N34°13'13\"W	11.04'	L28	S66°49'05\"E	23.69'
L7B	N34°13'13\"W	8.92'	L29	S23°15'35\"E	16.29'
L8	N70°08'33\"W	33.32'	L30	S04°49'38\"E	27.03'
L9	N85°17'09\"W	39.91'	L31	S19°16'11\"E	17.67'
L10	N85°00'40\"W	30.89'	L32	S88°34'44\"E	32.08'
L11	S38°22'07\"E	21.05'	L33	S03°59'30\"W	22.96'
L12	S71°28'00\"E	33.51'	L34	N82°32'17\"W	25.04'
L13	S39°50'09\"E	30.72'	L35	N84°41'25\"W	34.42'
L14	S31°16'58\"W	38.70'	L36	N01°23'23\"E	38.21'
L15	N86°18'45\"W	23.08'	L37	N08°54'15\"W	47.92'
L16	S85°49'36\"W	37.73'			
L17	S33°46'41\"W	34.45'			
L18	S02°25'55\"E	23.60'			



WETLANDS AS FLAGGED BY NATURAL RESOURCE CONSULTING AUGUST 2007



National Survey & Engineering

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SHEET 5 OF 9 SHEETS

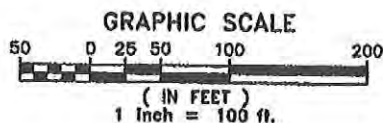
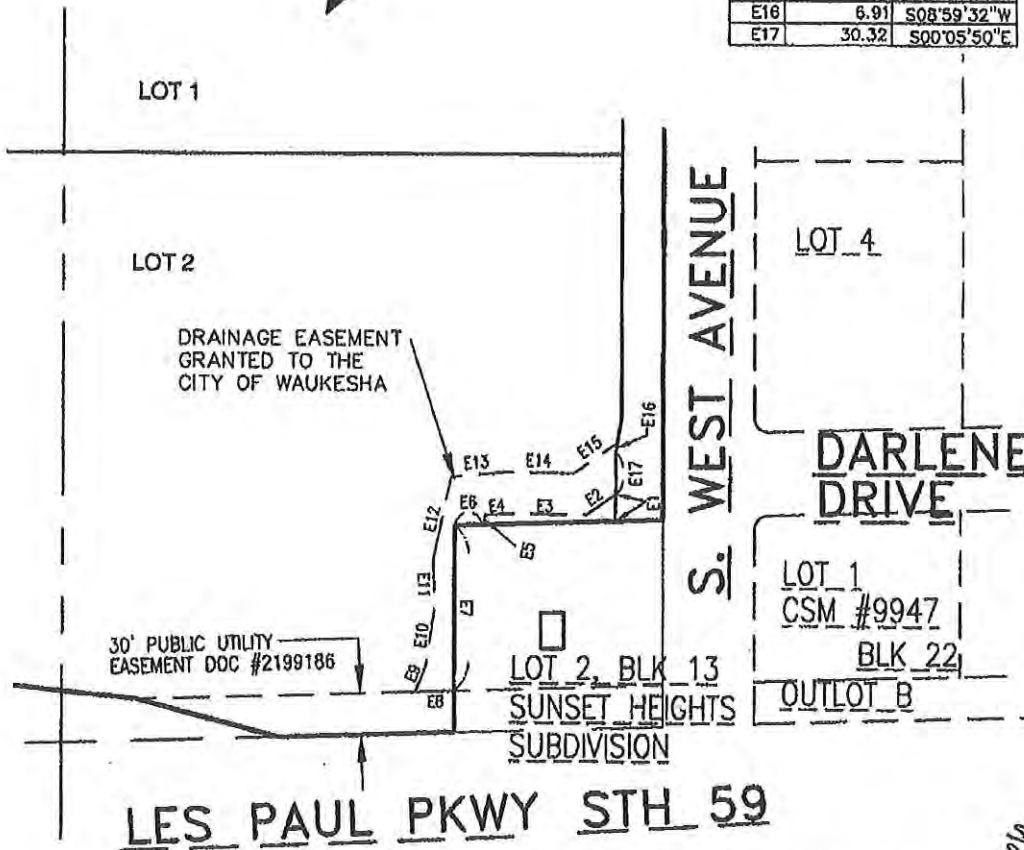
CERTIFIED SURVEY MAP NO. 10488

DRAINAGE EASEMENT DETAIL SHEET

Part of Lot 1, Block 13, in Sunset Heights Subdivision, being a part of the Northeast 1/4 of the Southwest 1/4, the Southeast 1/4 of the Northwest 1/4, the Southwest 1/4 of the Northeast 1/4, and the Northwest 1/4 of the Southeast 1/4 of Section 15, Town 6 North, Range 19 East, in the City of Waukesha, Waukesha County, Wisconsin.



LINE TABLE		
LINE	LENGTH	BEARING
E1	18.87	N00°05'50"W
E2	25.60	S55°24'53"W
E3	58.07	N89°31'25"W
E4	14.87	S84°43'10"W
E5	6.78	S11°56'50"W
E6	20.55	S88°09'10"W
E7	119.98	S00°05'50"E
E8	28.17	S88°04'18"W
E9	21.53	N21°18'38"E
E10	42.33	N07°44'44"E
E11	34.67	N01°38'00"W
E12	60.72	N11°56'50"E
E13	38.49	N84°43'10"E
E14	50.10	S89°31'25"E
E15	38.06	N55°24'53"E
E16	6.91	S08°59'32"W
E17	30.32	S00°05'50"E



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263-781-1000
Fax 262-797-7373
16745 W. Bluemound Road
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Brookfield, WI 53005-5438
www.nsaec.com

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CS100.dwg/CS10nL1H
SHEET 8 OF 9 SHEETS

CERTIFIED SURVEY MAP NO. 10488

Part of Lot 1, Block 13, in Sunset Heights Subdivision, being a part of the Northeast 1/4 of the Southwest 1/4, the Southeast 1/4 of the Northwest 1/4, the Southwest 1/4 of the Northeast 1/4, and the Northwest 1/4 of the Southeast 1/4 of Section 15, Town 6 North, Range 19 East, in the City of Waukesha, Waukesha County, Wisconsin.

SURVEYOR'S CERTIFICATE

STATE OF WISCONSIN }
 :SS
WAUKESHA COUNTY }

I, ERIC R. STURM, Registered Land Surveyor, do hereby certify:

THAT I have surveyed, divided, mapped and dedicated a division of part of Lot 1, Block 13, in Sunset Heights Subdivision, being a part of the Northeast 1/4, Southeast 1/4, Southwest 1/4, and Northwest 1/4 of Section 15, Township 6 North, Range 19 East, in the City of Waukesha, Waukesha County, Wisconsin, bounded and described as follows:
Commencing at the Westerly witness monument to the Northeast corner of the Northwest 1/4 of Section 15; thence North 88°22'13" East along the North line of said 1/4 section 55.49 feet to the Northeast corner of said Northwest 1/4 section; thence South 00°05'51" East along the East line of said Northwest 1/4 section 2545.35 feet to the Point of Beginning of lands to be described; thence North 89°54'10" East 302.77 feet to a point on the West line of South West avenue; thence Southeasterly 437.09 feet along said West line and the arc of a curve whose center lies to the Southwest, whose radius is 715.53 feet, and whose chord bears South 17°35'50" East 430.33 feet to a point; thence South 00°05'50" East along said West line 854.01 feet to a point; thence South 88°09'10" West 150.00 feet to a point; thence South 00°05'50" East 150.00 feet to a point on the North line of Les Paul Parkway (STH 59); thence South 88°04'18" West along said North line 128.14 feet to a point; thence North 75°13'47" West along said North line 104.40 feet to a point; thence North 84°09'21" West along said North line 661.31 feet to a point on the East line of the Wisconsin Central Limited Railroad right of way; thence North 00°00'10" East along said East line 1327.85 feet to a point; thence North 89°54'10" East 602.17 feet to the point of beginning.
Said lands contain 1,391,523 square feet, or 31.9450 acres.
Net area (less right-of-way dedication) 1,352,489 square feet, or 31.0489 acres.

THAT I have made such survey, land division, map and dedication by the order and direction of HWY 59 WEST LIMITED PARTNERSHIP, owner.

THAT such map is a correct representation of all the exterior boundaries of the land surveyed and the land division thereof made.

THAT I have fully complied with the provisions of Chapter 236 of the Wisconsin State Statutes and the Land Division and Ordinances of the City of Waukesha in surveying, dividing and mapping the same.

DATE DECEMBER 11, 2007  (SEAL)
REVISED
DATE DECEMBER 20, 2007 ERIC R. STURM,
REGISTERED LAND SURVEYOR S-2309

CERTIFIED SURVEY MAP NO. 10486

Part of Lot 1, Block 13, in Sunset Heights Subdivision, being a part of the Northeast 1/4 of the Southwest 1/4, the Southeast 1/4 of the Northwest 1/4, the Southwest 1/4 of the Northeast 1/4, and the Northwest 1/4 of the Southeast 1/4 of Section 15, Town 6 North, Range 19 East, in the City of Waukesha, Waukesha County, Wisconsin.

OWNER'S CERTIFICATE

HWY 59 WEST LIMITED PARTNERSHIP, a private limited company, duly organized and existing under and by virtue of the laws of the State of Wisconsin, as owner, hereby certifies that said private limited company caused the land described on this Certified Survey Map to be surveyed, divided, mapped and dedicated as represented on this map in accordance with the requirements of the City of Waukesha.

HWY 59 WEST LIMITED PARTNERSHIP, as owner, does further certify that this map is required by S.236.20 or 236.12 to be submitted to the following for approval or objection: City of Waukesha.

IN WITNESS WHEREOF, HWY 59 WEST LIMITED PARTNERSHIP, has caused these presents to be signed by the hand of ROBERT A. PATCH, the President of HWY 59 WEST (GP), INC., a Wisconsin corporation, its GENERAL PARTNER, on this 21 day of December, 2007

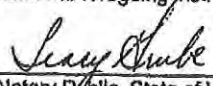
HWY 59 WEST LIMITED PARTNERSHIP
a Wisconsin Limited Partnership

By: HWY 59 WEST (GP), INC.,
a Wisconsin corporation
Its: General Partner

By: 
ROBERT A. PATCH
President

STATE OF WISCONSIN }
 :SS
WAUKESHA COUNTY }

PERSONALLY came before me this 21 day of December, 2007
ROBERT A. PATCH, President of HWY 59 WEST (GP), INC., the General Partner and on behalf of HWY 59 WEST LIMITED PARTNERSHIP, to me known to be the person who executed the foregoing instrument and acknowledged that he executed the foregoing instrument as such officer as the deed of said entities, by their authority.


(SEAL)
Notary Public, State of Wisconsin
My commission expires
My commission is permanent



Sheet 8 of 9 Sheets

CERTIFIED SURVEY MAP NO. 10486

Part of Lot 1, Block 13, in Sunset Heights Subdivision, being a part of the Northeast 1/4 of the Southwest 1/4, the Southeast 1/4 of the Northwest 1/4, the Southwest 1/4 of the Northeast 1/4, and the Northwest 1/4 of the Southeast 1/4 of Section 16, Town 6 North, Range 19 East, in the City of Waukesha, Waukesha County, Wisconsin.

PLANNING COMMISSION APPROVAL

APPROVED by the Planning Commission of the City of Waukesha on this 14th day of November, 2007.

Larry Nelson
CHAIRPERSON

VOL 100 PAGES 87-95
3534066

REGISTER'S OFFICE
WAUKESHA COUNTY, WI
RECORDED ON

12-21-2007 2:31 PM

MICHAEL J. HASBLINGER
REGISTER OF DEEDS

REC. FEE: 20.00
REC. FEE-CD: 5.00
REC. FEE-ST: 2.00
TRAN. FEE:
TRAN. FEE-STATE:
PAGES: 9

Doug Koehler
~~SECRETARY~~
DOUG KOEHLER
PLANNER

COMMON COUNCIL APPROVAL

APPROVED by the Common Council of the City of Waukesha in accordance with the Resolution adopted on this 20th day of November, 2007.

Thomas C. Spill
CITY CLERK

Larry Nelson
MAYOR



95

STATEMENT

Property Located at:

2000 South West Avenue
Waukesha, Wisconsin
WDNR FID #: 268354570
WDNR BRRTS #: 02-68-552746

Tax Key No.: WAKC1353424
Parcel Identification No.: 291-1353-347-0000

I believe the legal description noted below for Lot 1 and Outlot 1 accurately describes the property known as Lot 1 and Outlot 1 (BRRTS # 02-68-552746). There is a separate case (BRRTS # 02-68-554922) for Lot 2.

Legal Description:

LOT 1 & OUTLOT 1 CSM NO 10488 (V100 CSM P87) REDIV PT LOT 1 BLK 13
SUNSET HEIGHTS SUB PT SW¼, NW¼, NE¼ & SE¼ SEC 15 T6N R19E
24.38 AC DOC NO 3533979



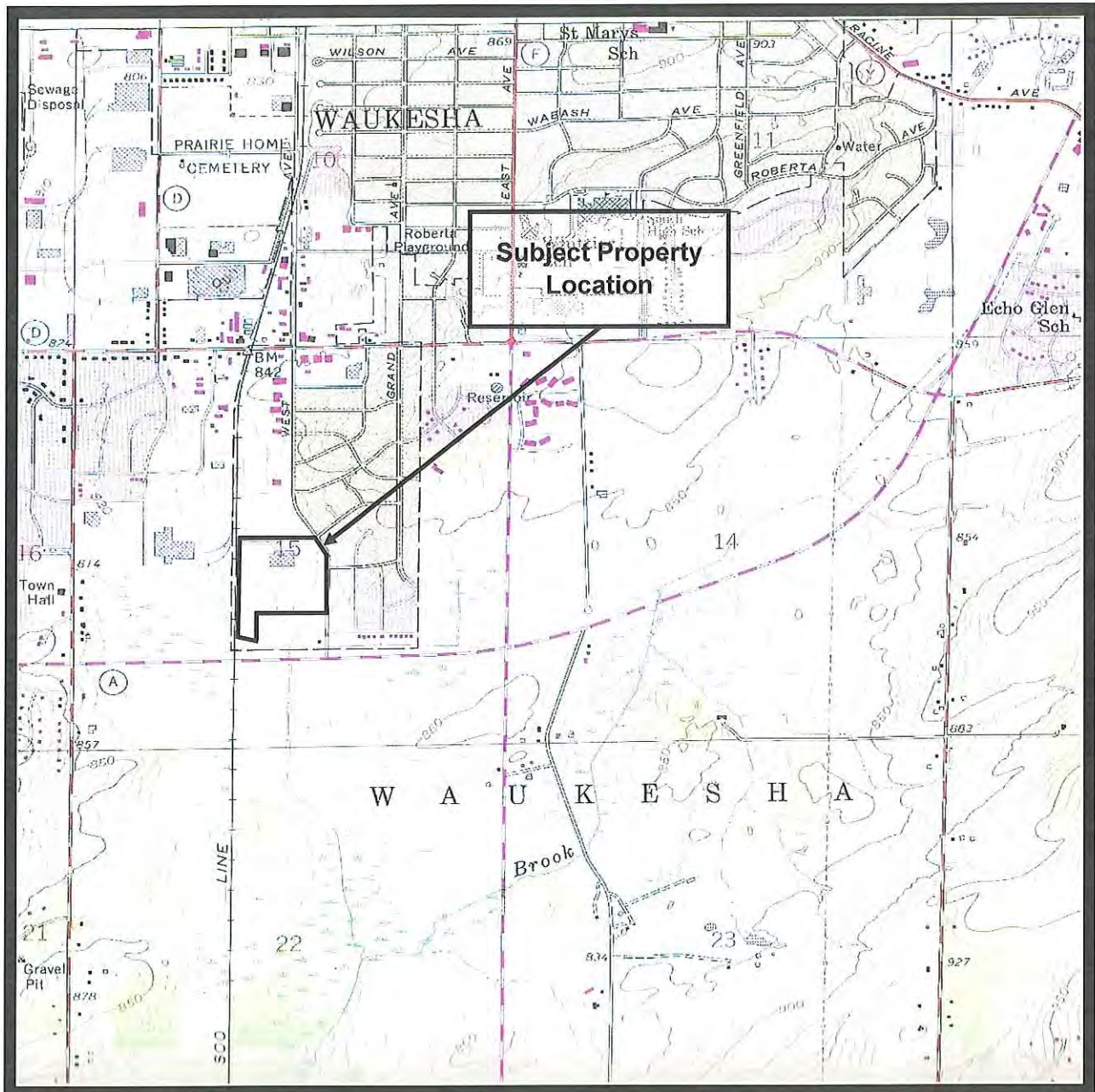
Signature of Responsible Party

D.S. Cox

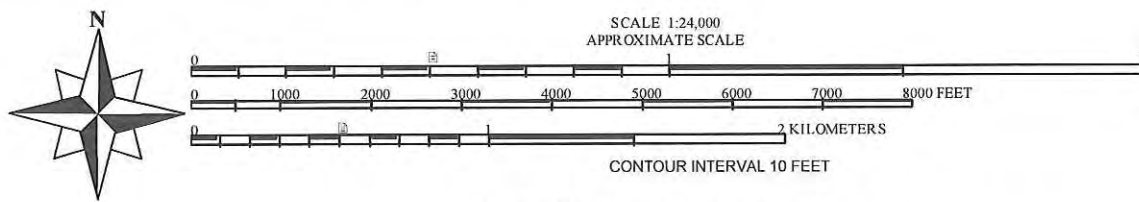
Printed Name of Responsible Party

SR DESIGN MANAGER, WALMART STORES INC.

Company and Position of Responsible Party



Source: United States Geological Survey, Muskego, Wisconsin, 7.5-Minute Topographic Maps, 1959, photorevised 1971 and 1976.



Waukesha, Waukesha County, Wisconsin

Part of the Northeast $\frac{1}{4}$ of the Southwest $\frac{1}{4}$, the Southeast $\frac{1}{4}$ of the Northwest $\frac{1}{4}$, the Southwest $\frac{1}{4}$ of the Northeast $\frac{1}{4}$,
and the Northwest $\frac{1}{4}$ of the Southeast $\frac{1}{4}$ of Section 15, Township 6 North, Range 19 East



Environmental Services
W237 N2878 Woodgate Rd., Ste. 2
Pewaukee, Wisconsin 53072
(262) 347-0898 Fax (262) 347-2256

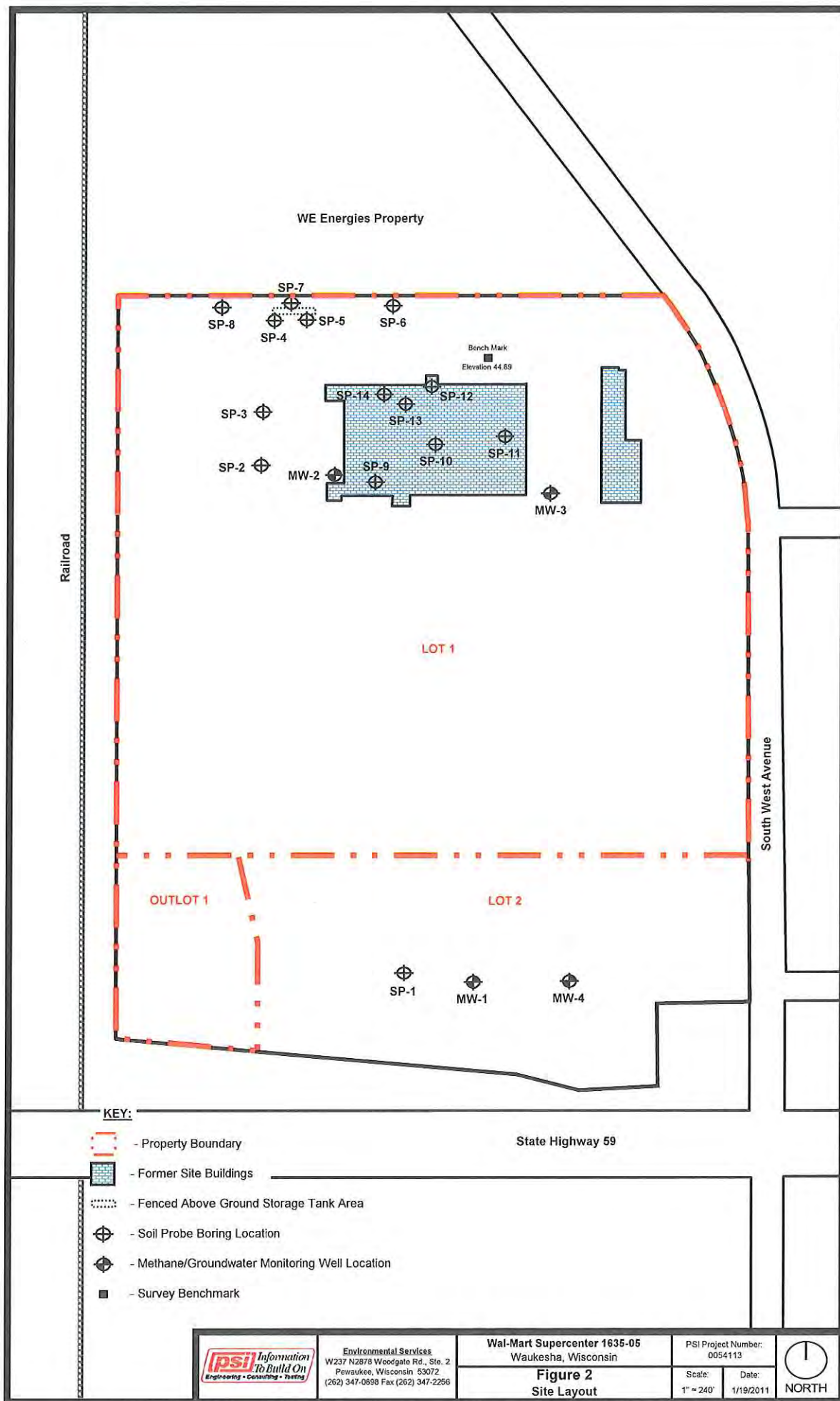
Wal-Mart Supercenter 1635-05
Waukesha, WI

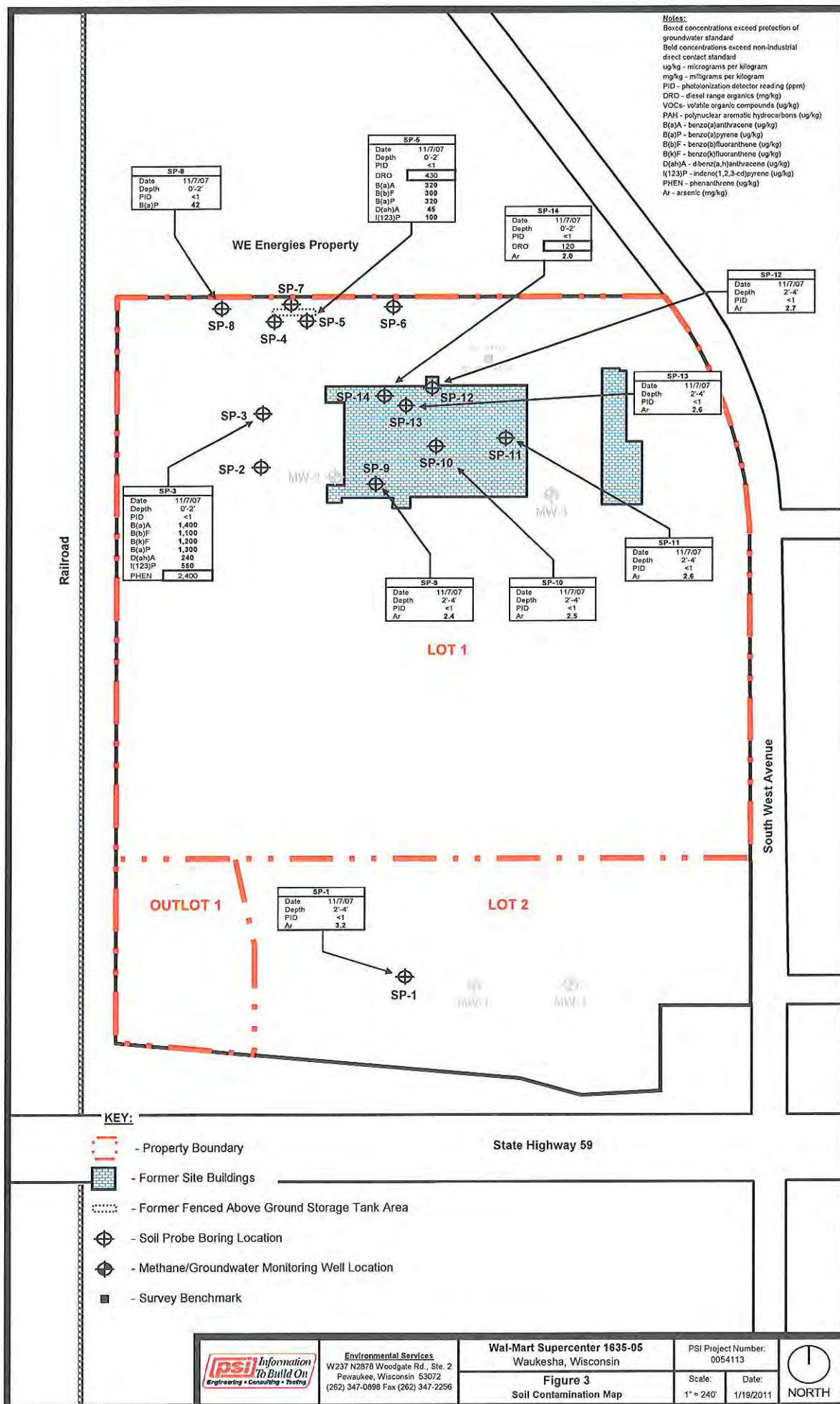
DATE:
1/19/2011

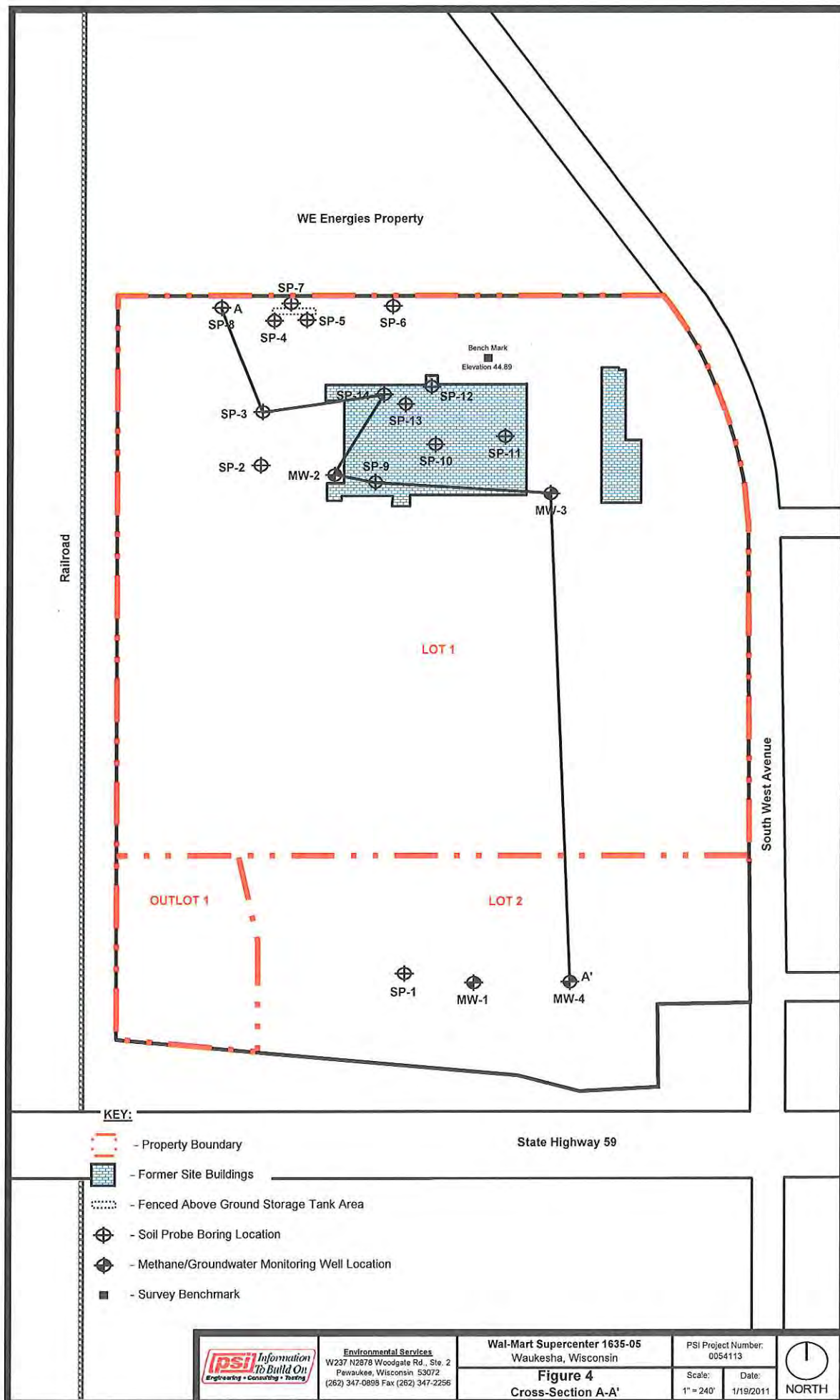
PROJECT #:
0054113

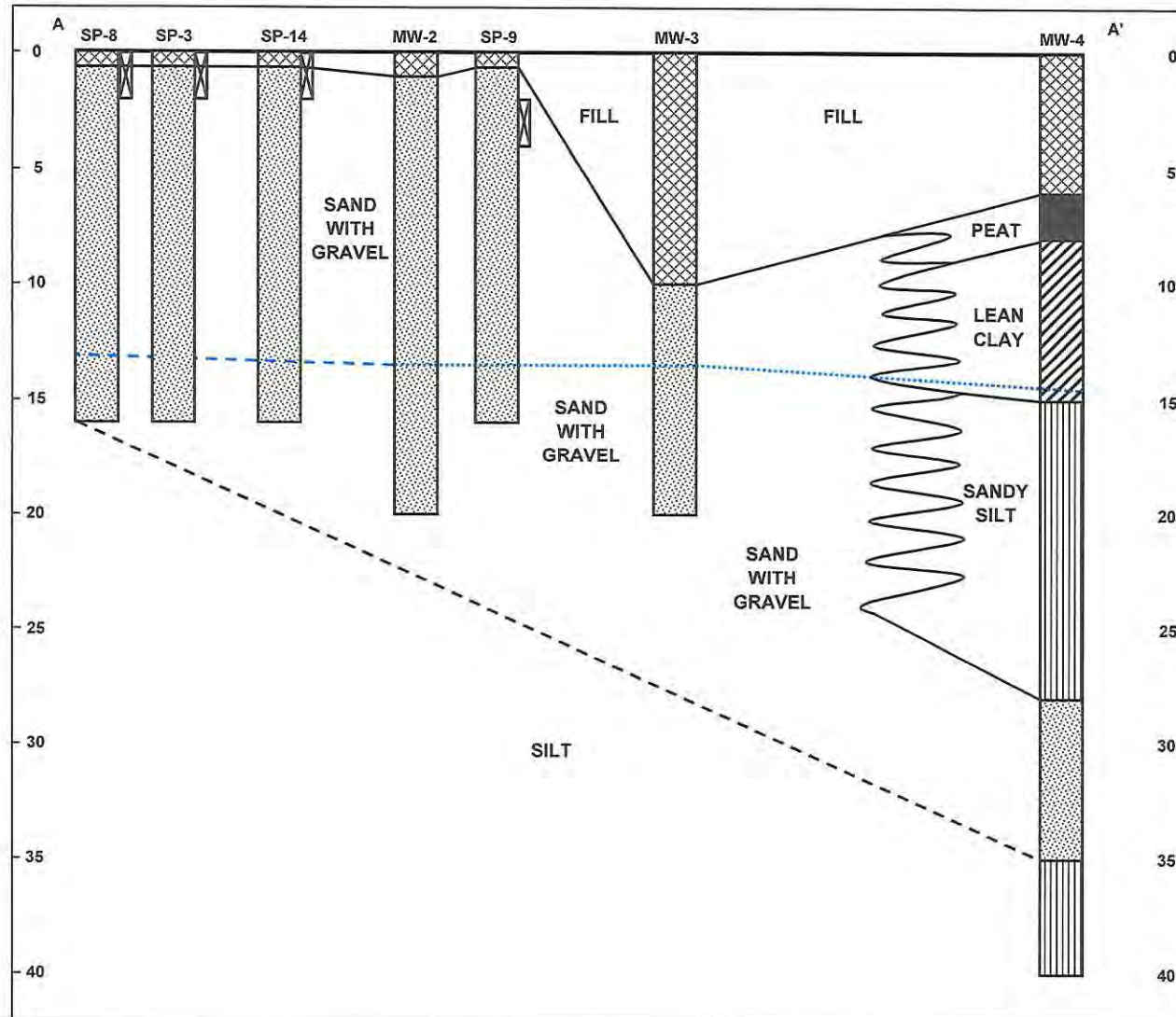
Site Location Map

Figure 1









Notes:

▨ - FILL

▨ - BROWN SAND WITH GRAVEL

▨ - SILT/SANDY SILT

..... - Groundwater Level

▨ - LEAN CLAY

■ - PEAT

✕ - Soil Sample Interval

- - - - - Inferred Groundwater Level



Environmental Services
W237 N2878 Woodgate Rd., Ste. 2
Pewaukee, Wisconsin 53072
(262) 347-0898 Fax (262) 347-2256

2000 - 2002 South West Avenue
Waukesha, Wisconsin

Figure 5
Geological Cross-Section

PSI Project Number:
'0054113

Date:
1/19/2011

TABLE 1
Summary of Soil Sample Analytical Results
Proposed Wal-Mart Supercenter No. 1635-05
Cretex Site
Waukesha, Wisconsin

Analytical Parameter	Depth	SP-1	SP-2	SP-3	SP-4	SP-5	SP-6	SP-7	NR 720	NR 746	USGS	Suggested PAH	
	Date	2'-4'	2'-4'	0'-2'	2'-4'	0'-2'	2'-4'	2'-4'	RCL	RCL	Background	Generic Soil Cleanup Levels	Direct Contact/
	Units	11/7/07	11/7/07	11/7/07	11/7/07	11/7/07	11/7/07	11/7/07	Non-Industrial	Groundwater Pathway		Groundwater Pathway	Non-Industrial
PID	i.u.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	—	—	—	—	—
GRO	mg/kg	< 2.9	< 2.6	< 2.6	< 2.6	< 2.6	< 2.6	< 2.6	100	—	—	—	—
DRO	mg/kg	54	< 1.6	45	< 1.7	430	< 1.8	< 1.8	100	—	—	—	—
VOCs													
Benzene	ug/kg	< 25	< 25	< 25	< 25	< 25	< 25	< 25	5.5	8,500	—	—	—
Ethylbenzene	ug/kg	< 25	< 25	< 25	< 25	< 25	< 25	< 25	2,900	4,600	—	—	—
Methyl-tert-Butyl-Ether	ug/kg	< 25	< 25	< 25	< 25	< 25	< 25	< 25	—	—	—	—	—
Toluene	ug/kg	< 25	< 25	< 25	< 25	< 25	< 25	< 25	1,500	38,000	—	—	—
1,2,4-Trimethylbenzene	ug/kg	< 25	< 25	< 25	< 25	< 25	< 25	< 25	—	83,000	—	—	—
1,3,5-Trimethylbenzene	ug/kg	< 25	< 25	< 25	< 25	< 25	< 25	< 25	—	11,000	—	—	—
Total Xylene	ug/kg	< 75	< 75	< 75	< 75	< 75	< 75	< 75	4,100	42,000	—	—	—
PAHs													
Acenaphthene	ug/kg	< 1.8	< 1.6	< 32	< 1.6	12	< 1.6	< 1.6	—	—	—	38,000	900,000
Acenaphthylene	ug/kg	< 2.0	< 1.8	540	< 1.8	170	< 1.8	< 1.8	—	—	—	700	1,800
Anthracene	ug/kg	< 2.2	< 1.9	750	< 1.9	280	< 1.9	< 1.9	—	—	—	3,000,000	5,000,000
Benzo(a)anthracene	ug/kg	< 2.1	< 1.9	1,400	< 1.9	320	< 1.9	< 1.9	—	—	—	17,000	88
Benzo(b)fluoranthene	ug/kg	3.8 Q	< 1.8	1,100	< 1.8	300	< 1.8	< 1.8	—	—	—	360,000	88
Benzo(k)fluoranthene	ug/kg	3.5 Q	< 1.7	1,200	< 1.8	350	< 1.8	< 1.8	—	—	—	870,000	880
Benzo(a)pyrene	ug/kg	3.9 Q	< 1.8	1,300	< 1.8	320	< 1.8	< 1.8	—	—	—	48,000	8.8
Benzo(ghi)perylene	ug/kg	< 2.2	< 2.0	610	< 2.0	110	< 2.0	< 2.0	—	—	—	6,800,000	1,800
Chrysene	ug/kg	4.9 Q	< 2.1	1,400	< 2.1	310	< 2.1	< 2.1	—	—	—	37,000	8,800
Dibenz(a,h)anthracene	ug/kg	< 2.2	< 2.0	240	< 2.0	45	< 2.0	< 2.0	—	—	—	38,000	8.8
Fluoranthene	ug/kg	8.5	< 1.9	3,400	< 1.9	740	< 1.9	< 1.9	—	—	—	500,000	600,000
Fluorene	ug/kg	< 2.0	< 1.7	170	< 1.7	15	< 1.7	< 1.7	—	—	—	100,000	600,000
Indeno(1,2,3-cd)pyrene	ug/kg	< 2.1	< 1.9	550	< 1.9	100	< 1.9	< 1.9	—	—	—	680,000	88
1-Methylnaphthalene	ug/kg	< 1.6	< 1.4	< 28	< 1.4	4.2 Q	< 1.4	< 1.4	—	—	—	23,000	1,100,000
2-Methylnaphthalene	ug/kg	< 1.7	< 1.5	< 29	< 1.5	7.6 Q	< 1.5	< 1.5	—	—	—	20,000	600,000
Naphthalene	ug/kg	< 1.4	< 1.2	< 24	< 1.2	< 2.4	< 1.2	< 1.2	—	—	—	400	20,000
Phenanthrene	ug/kg	15	< 1.9	2,400	< 1.9	250	< 1.9	< 1.9	—	—	—	1,800	18,000
Pyrene	ug/kg	6.5 Q	< 2.0	2,300	< 2.0	730	< 2.0	< 2.0	—	—	—	8,700,000	500,000
RCRA Metals													
Arsenic	mg/kg	3.2	—	—	—	—	—	—	0.039	—	0.7 - > 10	—	—
Barium	mg/kg	99	—	—	—	—	—	—	—	—	10 - 1,500	—	—
Cadmium	mg/kg	0.20	—	—	—	—	—	—	8	—	NAP	—	—
Chromium	mg/kg	14	—	—	—	—	—	—	14/16,000*	—	1-1,000	—	—
Lead	mg/kg	11	—	—	—	—	—	—	50	—	< 10 - 300	—	—
Mercury	mg/kg	0.024	—	—	—	—	—	—	—	—	0.01 - 3.4	—	—
Selenium	mg/kg	15 Q	—	—	—	—	—	—	—	—	< 0.01 - 3.9	—	—
Silver	mg/kg	< 0.013	—	—	—	—	—	—	—	—	< 0.1 - 73	—	—
Total PCBs	ug/kg	—	—	—	—	—	< 13	< 13	—	—	—	—	—

Notes:

Boxed concentrations exceed protection of groundwater RCL

Bold concentrations exceed non-industrial direct contact standard

— - Not analyzed/Not Established

Q - concentration detected between the laboratory Limit of Detection and the Limit of Quantitation

DRO - diesel range organics

GRO - gasoline range organics

i.u. - instrument units

mg/kg - milligrams per kilogram, parts per million

PAH - polynuclear aromatic hydrocarbons

PCB - polychlorinated biphenyls

PID - photoionization detector

RCL - residual contaminant level

RCRA - Resource, Conservation and Recovery Act

ug/kg - micrograms per kilogram, parts per billion

USGS - United States Geological Survey

VOC - volatile organic compounds

* - Total Chromium laboratory analytical results are comprised of a 6 to 1 ratio of trivalent chromium to hexavalent chromium; therefore, it is more appropriate to evaluate detected chromium contaminants with respect to this ratio.

TABLE 1 (Continued)
Summary of Soil Sample Analytical Results
Proposed Wal-Mart Supercenter No. 1635-05
Cretex Site
Waukesha, Wisconsin

Analytical Parameter	Depth Date Units	SP-3 0'-2' 11/7/07	SP-9 2'-4' 11/7/07	SP-10 2'-4' 11/7/07	SP-11 2'-4' 11/7/07	SP-12 2'-4' 11/7/07	SP-13 2'-4' 11/7/07	SP-14 0'-2' 11/7/07	NR 720 RCL - Non Industrial	NR 746 RCL Groundwater Pathway	USGS Background	Suggested PAH Generic Soil Cleanup Levels	
		11/7/07	11/7/07	11/7/07	11/7/07	11/7/07	11/7/07	11/7/07				Groundwater Pathway	Direct Contact/ Non-Industrial
PID	I.U.	< 1	< 1	< 1	< 1	< 1	< 1	< 1	—	—	—	—	—
GRO	mg/kg	< 2.6	—	—	—	< 2.6	< 2.5	< 2.6	100	—	—	—	—
DRO	mg/kg	3.2	< 1.8	< 1.8	< 1.7	< 1.8	< 1.9	120	100	—	—	—	—
PVOCs													
Benzene	ug/kg	< 25	< 25	< 25	< 25	< 25	< 25	< 25	5.5	8,500	—	—	—
Ethylbenzene	ug/kg	< 25	< 25	< 25	< 25	< 25	< 25	< 25	2,900	4,600	—	—	—
Methyl-tert-Butyl-Ether	ug/kg	< 25	< 25	< 25	< 25	< 25	< 25	< 25	—	—	—	—	—
Toluene	ug/kg	< 25	< 25	< 25	< 25	< 25	< 25	< 25	1,500	38,000	—	—	—
1,2,4-Trimethylbenzene	ug/kg	< 25	< 25	< 25	< 25	< 25	< 25	< 25	—	83,000	—	—	—
1,3,5-Trimethylbenzene	ug/kg	< 25	< 25	< 25	< 25	< 25	< 25	< 25	—	11,000	—	—	—
Total Xylene	ug/kg	< 75	< 75	< 75	< 75	< 75	< 75	< 75	4,100	42,000	—	—	—
PAHs													
Acenaphthene	ug/kg	< 1.6	< 1.6	< 1.7	< 1.6	< 1.6	< 1.6	1.6 Q	—	—	—	38,000	900,000
Acenaphthylene	ug/kg	3.1 Q	< 1.8	< 1.8	< 1.8	< 1.8	< 1.7	< 1.8	—	—	—	700	1,800
Anthracene	ug/kg	4.9 Q	< 1.9	< 2.0	< 1.9	< 1.9	< 1.9	< 1.9	—	—	—	3,000,000	5,000,000
Benzo(a)anthracene	ug/kg	31	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	5.8 Q	—	—	—	17,000	88
Benzo(b)fluoranthene	ug/kg	47	< 1.8	< 1.9	< 1.9	< 1.9	< 1.8	6.1	—	—	—	360,000	88
Benzo(k)fluoranthene	ug/kg	37	< 1.8	< 1.8	< 1.8	< 1.8	< 1.7	5.6 Q	—	—	—	870,000	880
Benzo(a)pyrene	ug/kg	42	< 1.8	< 1.9	< 1.8	< 1.8	< 1.8	2.5 Q	—	—	—	48,000	8.8
Benzo(ghi)perylene	ug/kg	25	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	2.3 Q	—	—	—	6,800,000	1,800
Chrysene	ug/kg	44	< 2.1	< 2.2	< 2.1	< 2.1	< 2.1	12	—	—	—	37,000	8,800
Dibenz(a,h)anthracene	ug/kg	6.9	< 2.0	< 2.0	< 2.0	< 2.0	< 1.9	< 2.0	—	—	—	38,000	8.8
Fluoranthene	ug/kg	93	< 1.9	< 2.0	< 2.0	< 2.0	< 1.9	24	—	—	—	500,000	600,000
Fluorene	ug/kg	< 1.7	< 1.7	< 1.8	< 1.8	< 1.8	< 1.7	< 1.7	—	—	—	100,000	600,000
Indeno(1,2,3-cd)pyrene	ug/kg	21	< 1.9	< 2.0	< 1.9	< 1.9	< 1.9	< 1.9	—	—	—	680,000	88
1-Methylnaphthalene	ug/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	32	—	—	—	23,000	1,100,000
2-Methylnaphthalene	ug/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	54	—	—	—	20,000	600,000
Naphthalene	ug/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	9.7	—	—	—	400	20,000
Phenanthrene	ug/kg	27	< 1.9	< 1.9	< 1.9	< 1.9	< 1.8	30	—	—	—	1,800	18,000
Pyrene	ug/kg	52	< 2.0	< 2.1	< 2.0	< 2.0	< 2.0	14	—	—	—	8,700,000	500,000
RCRA Metals													
Arsenic	mg/kg	—	2.4	2.5	2.6	2.7	2.6	2.0	0.039	—	0.7 - > 10	—	—
Barium	mg/kg	—	7.0	6.8	9.4	12	6.3	6.7	—	—	10 - 1,500	—	—
Cadmium	mg/kg	—	0.18	0.13	0.13	0.14	0.15	0.13	8	—	NAP	—	—
Chromium	mg/kg	—	5.5	3.2	4.7	5.0	3.4	2.8	14/16,000*	—	1-1,000	—	—
Lead	mg/kg	—	3.0	2.4	4.1	3.3	3.0	2.3	50	—	< 10 - 300	—	—
Mercury	mg/kg	—	0.0087	0.0069	0.0079	0.0095	0.0067	0.0074	—	—	0.01 - 3.4	—	—
Selenium	mg/kg	—	< 0.37	< 0.39	< 0.38	< 0.38	< 0.37	< 0.37	—	—	< 0.01 - 3.9	—	—
Silver	mg/kg	—	< 0.011	< 0.012	< 0.012	< 0.012	< 0.011	< 0.011	—	—	< 0.1 - 73	—	—
Total PCBs	ug/kg	< 13	—	—	—	—	—	—	—	—	—	—	—

Notes:

Boxed concentrations exceed protection of groundwater RCL

Bold concentrations exceed non-industrial direct contact standard

— = Not analyzed/Not Established

Q - concentration detected between the laboratory Limit of Detection and the Limit of Quantitation

DRO - diesel range organics

GRO - gasoline range organics

I.U. - instrument units

mg/kg - milligrams per kilogram, parts per million

PAH - polynuclear aromatic hydrocarbons

PCB - polychlorinated biphenyls

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RCL - residual contaminant level

RCRA - Resource, Conservation and Recovery Act

ug/kg - micrograms per kilogram, parts per billion

USGS - United States Geological Survey

VOC - volatile organic compounds

* - Total Chromium laboratory analytical results are comprised of a 6 to 1 ratio of trivalent chromium to hexavalent chromium; therefore, it is more appropriate to evaluate detected chromium contaminants with respect to this ratio.

Wisconsin Department of Natural Resources

Environmental Cleanup & Brownfields Redevelopment

BRRTS on the Web

Click the Location Name below to view the Location Details page for this Activity. Other Activities, if present, may be viewed from that page.

Basic Search >> 02-68-554922 Activity Details

<h2 style="margin: 0;">02-68-554922 CRETEX CONCRETE PRODUCTS MIDWEST INC LOT 2</h2> <div style="background-color: red; color: white; text-align: center; padding: 2px 10px; margin: 5px auto; width: fit-content;">OPEN ERP</div>						
Location Name (Click Location Name to View Location Details)				County	WDNR Region	
WALMART SUPERCENTER #1635				WAUKESHA	SOUTHEAST	
Address				Municipality		
2000 S WEST AVE				WAUKESHA		
Public Land Survey System		Latitude		Google Maps	RR Sites Map	
NW 1/4 of the SE 1/4 of Sec 15, T06N, R19E		42.977851		CLICK TO VIEW	CLICK TO VIEW	
Additional Location Description		Longitude		Facility ID	Size (Acres)	
		-88.2373991		268354570	UNKNOWN	
Jurisdiction	PECFA No.	EPA Cerclis ID	Start Date	End Date	Last Action	
DNR RR			2008-10-23		2016-09-21	
Characteristics						
PECFA Tracked?	EPA NPL Site?	Eligible for PECFA Funds?	Above Ground Storage Tank?	Drycleaner?	Co-Contamination?	On GIS Registry?
No	No	No	No	No	No	No
Actions						
Place Cursor Over Action Code to View Description						
Date	Code	Name	Comment			
2008-10-23	1	Notification				
2008-10-23	97	Request for Technical Assistance Received with Fee	REC'D CK# 347543 \$500.00			
2008-10-23	28	Phase I Environmental Site Assessment Rpt Received	AUTOPOPULATED FROM 29 ENTRY			
2008-10-23	29	Phase II Environmental Site Assessment Rpt Received				
2008-10-23	98	Technical Assistance Provided				
2008-10-30	99	Miscellaneous	DV MET WITH REPRESENTATIVES OF PROPERTY OWNER & PROPOSED PROPERTY DEVELOPER			
2010-02-25	2	RP Letter Sent	DECISION TO MAKE SEPARATE CASE FOR LOT 2 & SPLIT FROM LOT 1 & OUTLOT 1			
2011-09-02	99	Miscellaneous	REQD POSTING SIGNS TO KEEP PEOPLE OFF PROP. AS REQ. IN 2/25/10 LTR			
2011-09-07	130	DNR Regulatory Reminder Sent	Vapor Intrusion (VI) Assessment Notification Ltr Sent			
Linked to Code 130: 0268554922_VI_Letter.pdf Click to Download or Open						
2011-09-30	99	Miscellaneous	REC'D DOCUMENTATION THAT SIGNS WERE POSTED.			
2012-12-11	99	Miscellaneous	DV INFORMED CONSULTANT THAT THE NO TRESPASSING SIGNS WERE REMOVED			
2012-12-12	99	Miscellaneous	REC'D DOC THAT THE NO TRESPASSING SIGNS WERE POSTED AGAIN.			
2014-06-26	99	Miscellaneous	INFORMED LAY FIRM FOR RP THAT NO TRESPASSING SIGNS WERE NO LONGER PRESENT			
2014-07-21	99	Miscellaneous	REC'D DOCUMENTATION THAT NO TRESPASSING SIGNS WERE POSTED ON PROPERTY			

2016-06-22	99	Miscellaneous	CONTACTED RP REP. & INFORMED THEM THAT NO TRESPASSING SIGNS WERE NOT PRESENT ON PROPERTY
2016-09-21	99	Miscellaneous	REC'D DOCUMENTATION THAT NO TRESPASSING SIGNS WERE POSTED AGAIN
Impacts			
Type		Comment	
Concrete/Asphalt		-	
Groundwater Contamination		-	
Substances			
Substance	Type	Amount Released	Units
Metals	Metals		
Polynuclear Aromatic Hydrocarbons	Petroleum		
Petroleum - Unknown Type	Petroleum		
Volatile Organic Compounds	VOC		
Who			
Role	Name/Address		
Project Manager	DAVE VOLKERT 141 NW BARSTOW WAUKESHA, WI 53188		
Responsible Party	HIGHWAY 59 WEST LIMITED PARTNERSHIP 1000 N WATER ST, SITE 1700 MILWAUKEE, WI 53202		

BRRTS data comes from various sources, both internal and external to DNR. There may be omissions and errors in the data and delays in updating new information. Please see the [disclaimers page](#) for more information. We welcome your [Feedback](#).

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Waub. Concrete Products

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LUST
ERP

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ENVIRONMENTAL



PROFESSIONALS LTD.SM

June 26, 1996

Ms. Mary Lou Bozica
Environmental Repair Section
Southeast District - Annex Building
P.O. Box 12436
4041 N. Richards Street
Milwaukee, WI 53212

Re: Soil Investigation
Waukesha Concrete Products Property
2000 South West Avenue
Waukesha, WI 53187

Dear Ms. Bozica:

Enclosed for your review is the Soil Investigation Report prepared for Brad Lemhardt of Waukesha Concrete Products by Environmental Professionals LTD. Analytical laboratory results during the investigation procedures detected contaminated soil below the NR 720 Closeout Guidelines.

Based on the results and conclusions presented in the report, we recommend that this site be considered for closure by the WDNR Close-out Committee.

We look forward to working with you in bringing this site to closure. If you have any questions, please call.

Sincerely,
ENVIRONMENTAL PROFESSIONALS LTD.

Jeff J. Schure
Hydrogeologist

Enclosures: Soil Investigation Report

cc: Mr. Brad Lemhardt, Plant Superintendent, Waukesha Concrete Products



SOIL INVESTIGATION

**WAUKESHA CONCRETE PRODUCTS
WAUKESHA, WISCONSIN**

JUNE 26, 1996

Performed For: Waukesha Concrete Products
Mr. Brad Lemhardt
2000 South West Avenue
Waukesha, Wisconsin

Property Location: 2000 South West Avenue
Waukesha, Wisconsin


Project Directed by: 
Patti Schott, Project Manager

Project Hydrogeologist 
Jeff J. Schure, Project Hydrogeologist

SOIL INVESTIGATION
WAUKESHA CONCRETE PRODUCTS
WAUKESHA, WISCONSIN

JUNE 1996

I, Jeff Schure, here certify that I am a hydrogeologist as that term is defined in s.NR 712.03(1), Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wi. Adm. Code.



Jeff J. Schure
Project Hydrogeologist

EXECUTIVE SUMMARY

On June 27, 1995, R.A. Smith and Associates, Inc. performed a Phase II Environmental Site Assessment on a portion of the STH 59 Grade Separation project corridor. The investigation focused on potential impacts that Waukesha Concrete Products may have had on property under consideration for acquisition by the Wisconsin Department of Transportation (WDOT).

Four soil borings were advanced (B-1 through B-4) revealing no detection of contamination in three of the four borings. The fourth boring (B-2) revealed a concentration of 120 ppm Diesel Range Organics (DROs) at a depth of 2.5 to 4.5 feet below ground surface (bgs). Groundwater samples collected from all four borings reflected chemical composition within the normal ranges for groundwater in Wisconsin.

Further investigation, conducted by R.A. Smith on October 18, 1994, in the area of boring B-2 was to determine the extent of DRO affected soil. A backhoe was used to strip six inch lifts off the immediate area surrounding borehole B-2. Two samples were collected for laboratory analysis. Results indicated DRO concentrations of 290 ppm at three feet bgs and 300 ppm at four feet bgs.

On June 29, 1996, Environmental Professionals, ltd. (EPL) was on site to further document the existence and extent of contamination around the former boring B-2. Prior to the investigation EPL subcontracted out Metropolitan Engineering, Inc. to survey in the location of B-2. A backhoe was used to advance an excavation through the area of B-2 to a depth of seven feet bgs. Seven soil samples were taken and analyzed for Gasoline Range Organics (GRO), Diesel Range Organics (DRO), Petroleum Volatile Organic Compounds (PVOC) and Petroleum Aromatic Hydrocarbons (PAH). Laboratory results detected DRO concentrations from 14 ppm at seven feet bgs in T-2 to 229 ppm at five feet bgs in T-11. GRO and PVOC results revealed no detection in all samples taken, while the presence of PAHs were found in all of the samples analyzed.

Based upon the results of our investigation, contamination appears to be minimal and localized in one isolated pocket. Analytical results revealed concentrations of DRO at levels below the NR 720 Closeout Guidelines. The extent of contamination has been defined vertically and horizontally by borings, test pits and the excavation performed. Remaining contamination does not appear to be migrating through the soil column down to the water table. The low amount of contamination remaining does not appear to demonstrate a risk.

Based on results and conclusions presented within this report, Environmental Professionals ltd. recommends that no further investigation be performed at the site and that the site be considered for closure by the WDNR Close-out Committee.

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GENERAL INFORMATION

This report was prepared on behalf of Brad Lemhardt by Environmental Professionals ltd. (EPL) for the Waukesha Concrete Property located at 2000 South West Avenue, Waukesha, Wisconsin (Figure 1). This report summarizes the results of soil investigational activities performed by EPL to further document the existence and extent of contamination around the former boring B-2. Based on this investigation, EPL is requesting closure of the site from the Wisconsin Department of Natural Resources (WDNR).

This report was prepared in consideration of the requirements of Chapter NR 716.15 Wisconsin Administrative Code (NR 716). The following information is provided pursuant to NR 716.15(3)(d):

*	Project Title:	Soil Investigation Waukesha Concrete Products
*	Current Property Owner: Address:	Waukesha Concrete Products 2000 South West Avenue Waukesha, Wisconsin 53187
*	Contact: Telephone	Mr. Brad Lemhardt Plant Superintendent (414)242-9335
*	Consultant: Address	Environmental Professionals ltd. 1126 South 70th Street Suite South 415 A West Allis, Wisconsin 53214
*	Contact: Telephone	Patti Schott, Project Manager (414)475-2511
*	Site Name: Address	Waukesha Concrete Products 2000 South West Avenue Waukesha, Wisconsin
	Location	Lot 1, Block 13, in Sunset Heights Subdivision, being a part of the NE 1\4, SE 1\4, NW 1\4, and SW 1\4 of Section 15, Township 6 North, Range 19 East, City of Waukesha, Waukesha County, Wisconsin.

BACKGROUND INFORMATION

This section summarizes site background information including activities affecting public health, safety, or welfare, previous discharges, and response actions to date.

Activities Affecting Public Health, Safety or Welfare

During the period of June 27, 1994, R.A. Smith and Associates, Inc. performed a Phase II Environmental Site Assessment on a portion of the STH 59 Grade Separation project corridor. The investigations intent was to provide a preliminary review of the risk relative to the purchase of a portion of this property for roadway embankment construction by the Wisconsin Department of Transportation (WDOT).

Four soil borings were performed on the Waukesha Concrete Products property along the proposed right-of-way. The boreholes were utilized to collect data associated with the type of soil present, the general elevation of the groundwater table, and soil and groundwater chemistry. The focus was to determine conditions of the project site prior to the purchase of the property by the WDOT. Four soil borings were advanced (B-1 through B-4) within the overlying fill material and into the underlying natural sediments. Two soil samples were taken from each boring, one sample was chosen from the unnatural fill material and one from the underlying natural sediments.

Laboratory results revealed no detection of contamination in three of the four borings. The fourth boring (B-2) revealed a concentration of 120 ppm DRO at a depth of 2.5 to 4.5 feet bgs. Groundwater samples collected from all four borings reflected chemical composition within the normal ranges for groundwater in Wisconsin.

Further investigation on October 18, 1994, conducted by R.A. Smith, in the area of boring B-2 was to determine the extent of DRO affected soil. A backhoe was used to strip six inch lifts off the immediate area surrounding borehole B-2. Two samples were collected for laboratory analysis. Results indicated DRO concentrations of 290 ppm at three feet bgs and 300 ppm at four feet bgs. It was not apparent that the extent of contamination had been defined. The results of the laboratory analysis indicated that possible contamination existed within the subsurface soils. The WDNR was notified of contamination at this site.

Previous Discharges

One 550 gallon diesel UST and one 1,000 gallon gasoline UST that were located more than 2,000 feet North of the present day investigation site were removed in May of 1990. A total of 230 cubic yards of soil was overexcavated and landfilled and 7,800 gallons of groundwater was pumped from a sump installed in the tank area and disposed of at the Waukesha Wastewater Treatment Plant. Confirmation samples taken from the excavation revealed TPH levels below 5 ppm. Analysis of groundwater samples taken showed no detection of petroleum constituents. On October of 1990, the Wisconsin Department of Natural Resources granted Waukesha Concrete Products no further action.

Response Actions to Date

EPL's understanding of the site conditions and history is based on information attained from R.A. Smiths "Phase II Environmental Site Assessment" Report and during EPL's investigational activities.

The project site is located at Waukesha Concrete Products Property, 2000 South West Avenue, in the City of Waukesha, Waukesha County, Wisconsin. The site is owned and operated for the purpose of concrete and piping production and warehousing. The site consist of a production, warehousing office and maintenance building facility and various concrete, asphalt and gravel parking areas. Land uses in the immediate area include: light industrial, commercial, residential, agricultural and wetlands.

On June 29, 1996, EPL was on site to document the existence and extent of contamination around the former boring B-2 by advancing a limited backhoe excavation. Prior to the investigation EPL subcontracted out Metropolitan Engineering, Inc. to survey in the location of the former borings. A backhoe was used to advance an excavation through the area of B-2 to a depth of seven feet bgs. A total of 30 cubic yards of soil was excavated, stockpiled and backfilled within the excavation. Soil samples were collected from within the excavation using a stainless steel spoon and trowel equipment. Samples were placed in ziplock plastic bags for field screening. Field screening results indicated no detection of organic vapors within all samples screened. Seven soil samples were taken and analyzed for GRO, DRO, PVOC and PAH. Laboratory results detected DRO concentrations from 14ppm at seven feet bgs in T-2 to 229 ppm at five feet bgs in T-11. GRO and PVOC results revealed no detection in all samples taken, while the presence of PAH were found in all of the samples analyzed. There are no WDNR clean-up guidelines for PAH concentrations in soils. Based on these results, soil contamination does not appear to be ubiquitous at the site.

METHODS OF INVESTIGATION

This section summarizes the soil investigational activities performed by EPL. During the period of June 29, 1996, EPL was on site to document the existence and extent of contamination on the Waukesha Concrete Products Property by advancing a limited backhoe excavation. The excavation was performed by D.F. Thomas Construction, under EPL's supervision using a backhoe equipped with a small bucket. A total of 30 cubic yards of soil was excavated, stockpiled and backfilled within the excavation. Soil samples were collected throughout the excavation using stainless steel spoon and trowel equipment. The soil samples were classified in the field by a EPL geologist in accordance with the United Soil Classification System (USCS). PID screening results are summarized in Table 3. Prior to the investigation EPL subcontracted out Metropolitan Engineering, Inc. to survey in the location of the previous borings performed (Figure 3).

Soil Sampling

On June 29, 1996, seven soil samples were submitted to a Wisconsin certified laboratory for gasoline range organics (GRO, WDNR Modified GRO method), diesel range organics (DRO, WDNR Modified DRO method), polyaromatic hydrocarbons (PAH, USEPA method 8310) and petroleum volatile organic compounds (PVOCs, USEPA method 8240). EPL also collected a methanol blank for quality assurance/quality control (QA\QC) purposes. Soil samples were screened in the field for the presence of organic vapors using a photoionization detector (PID) with a 10.6 eV lamp.

Soil samples collected for DRO, GRO, PVOC and PAH laboratory analysis were collected, split and placed into two reclosable freezer bags, one for the field screening and the other for the laboratory sample. The field screening sample was allowed to reach an approximate temperature of 70 degrees F. A hole was punctured in the bag and the PID probe placed through the hole. The sample was monitored for approximately 30 seconds. The PID was calibrated to 98 parts per million isobutylene, prior to monitoring samples from each boring. The PID results, used in conjunction with physical observations, was used to determine the sample which exhibited the greatest potential for contamination. Field screening procedures followed manufacturers recommended procedures and USEPA "Field Measurements, Dependable Data When You Need It" (September 1990).

QA\QC performed during the soil sampling phase of the investigation included the collection of a methanol trip blank consisting of 2, 2-ounce tared jars with septa, containing 25 mls of methanol. The samples were kept in the cooler during the entire sampling event. All samples were placed in an iced cooler immediately following methanol preservation and/or collection. Soil sampling was performed following industry standard operating procedures, such as those outlined in WDNR, Emergency and Remedial Response Section "Guidance For Conducting Environmental Response Actions" (March 1992), WDNR "Leaking Underground Storage Tank (LUST) and Petroleum Analytical and Quality Assurance Guidance" (July 1993) and WDNR "Site Assessments for Underground Storage Tanks Technical Guidance" (September 1992).

RESULTS

This section summarizes the results of investigational activities, environmental analysis, and nature and extent of contamination. In addition, as required by NR 716.15 (3)(a) 1 and 2, this section includes scoping information (i.e., NR 716.07) and a description of the sequence of activities.

Scoping Information

- A. Site History
 - 1. Site Uses: Concrete Products Manufacturing and Storage
 - 2. Record of Past Hazardous Substance or Environmental Pollution: None
- B. Nature and Extent of Alleged Contamination
 - 1. Type: Unknown
 - 2. Amount: Unknown
 - 2. Affected Media: Soil
 - 3. Previous Discharges: One 550 gallon diesel, one 1,000 gallon gasoline UST
 - 4. Proximity to Other Sources of Contamination: Unknown
 - 5. Is access Agreement Necessary: No
 - 6. Potential Impacts to:
 - A. Endangered Species: None
 - B. Sensitive Species, Habitats or Ecosystems: None
 - C. Wetlands: Yes
 - D. Outstanding or Exceptional Resource Waters: None
 - E. Historical or Archaeological Site: None
- C. Current and Potential Remedial Activities
 - 1. Interim Actions: Soil Boring and Excavational Activities
 - 2. Remedial Actions Already Performed: None
- D. Other Information that Affects Site Investigation: None

Description of Sequence of Activities

On June 29, 1996, EPL was on site to document the existence and extent of contamination around the former boring B-2 by advancing a limited backhoe excavation. Prior to the investigation EPL subcontracted out Metropolitan Engineering, Inc. to survey in the location of B-2. A backhoe was used to advance an excavation through the area of B-2 to a depth of seven feet bgs. Soil samples were collected from within the excavation using a stainless steel spoon and trowel equipment. Samples were placed in ziplock plastic bags for field screening. Field screening results indicated no detection of organic vapors within all samples screened.

Analytical Results

Soil analytical results for samples collected throughout the soil excavation for analysis are summarized in Table 1 and 2. Laboratory reports and chain of custodies are included in Appendix C.

Soils

On June 29, 1996, seven soil samples were taken and analyzed for GRO, DRO, PVOC and PAH. Analytical results revealed no detection of total PVOC's and GRO in all samples except for T-1 at three feet bgs with Xylenes concentrations at 203 ppm. Laboratory results detected DRO concentrations from 14 ppm at seven feet bgs in T-2 to 229 ppm at five feet bgs in T-11. T-1 revealed 37 ppm DRO, while T-5, T-6, T-7, and T-10 had concentrations of DRO at 82, 210, 81 and 124 ppm respectively. The presence of PAHs were found in all of the samples analyzed.

Environmental Analysis

This section summarizes site geology and hydrogeology.

Site Geology

Based on prior borings and the excavation pit, the site appears to consist of a brown to gray sandy and gravel fill with some concrete rubble intermixed within the uppermost layer (6 to 10 feet bgs). Immediately below the fill lies a layer of black organic peat which varies in thickness from 2 to 4.9 feet. Below the peat lies a layer of brown to grey clayey silt to silty clay, which varies in thickness from 3 to 5 feet. The final layer was a wet grey sand with some silt and gravel.

Other than the fill material, this type of soil stratigraphy is typical of the Waukesha County region. The peat layer is of Holocene age, and was formed by accumulation of plant debris typically associated with marsh type environments. The finer textured silts and clays or marls were deposited in freshwater lakes, formed possibly by the accumulated glacial meltwater. The gravelly and silty sands were typically deposited in meltwater streams or deltas during the Pleistocene glacial period. The underlying bedrock geology in this area consists of Silurian dolomite, or Ordovician shale.

Site Hydrogeology

A shallow drainage ditch separates the fill from the marshy region along the right-of-way. An abrupt slope about 8 feet high marks the edge of the fill material. South of the marshy region is a shallow grassy slope leading to the edge of STH 59. The drainage ditch continues west of the Wisconsin Central Railroad via a culvert. Three manholes are located between the fill slope and drainage ditch. The central manhole contains a pump which is used to manage floodwater. According to Waukesha Concrete the city of Waukesha manually regulates water flow in this ditch during flood events via use of these pumps. The area west of the tracks is a much larger marsh region which holds flood waters pumped from the east side of the tracks. Agricultural fields are the primarily land usages found south of STH 59.

Nature and Extent of Contamination

This section describes the results of the laboratory analysis for soil. The result of soil analysis are summarized in Tables 1 through 3. Complete laboratory data packages are found in Appendix C.

Soils

The soil contamination which has occurred on-site appears to have been minimal. Soil at the former location of B-2 is observed to be an isolated pocket. While low concentrations of DROs were detected at this location, these concentrations are at and below the NR 720 Soil Cleanup Guidelines.

During excavational activities no odors were observed. Low concentrations of DRO that were found may have been contributed to material dredged from the bottom of the near-by drainage ditch which has been maintained within the past four years or asphalt that also existed within the fill. Soil borings B-1, B-3 and B-4 are in location to access the horizontal contaminant movement. Laboratory analytical results indicated concentrations of DRO of no detection. DRO concentrations were non-detect in all borings to a depth of 20 feet below ground surface identifying the vertical extent of contamination.

Since the native soil at this site is a silty clay, any remaining contamination within the soil would not very likely impact groundwater due to the low hydraulic conductivity of the clay.

Groundwater

Analytical data from the sampling event indicated that underlaying groundwater at this site has not been impacted by the petroleum release.

Conclusions and Recommendations

Conclusions

Based on field observations and analytical results associated with the soil investigation performed, Environmental Professionals conclude:

Geology and Hydrogeology

- * Brown to gray sandy and gravel fill with some concrete rubble intermixed at 0.0 to 6.0-10.0 feet.
- * Black organic peat below the fill in thickness of 2.0 to 5.0 feet. Brown to grey clayey silt to silty clay 3.0 to 5.0 feet below the peat. The final layer consists of a wet grey sand with some silt and gravel.

Soil Contamination

The soil contamination which has occurred on-site appears to be minimal. Soil at the former location of B-2 is observed to be an isolated pocket. While low concentrations of DROs were detected at this location, these concentrations are below the NR 720 Soil Cleanup Guidelines of 250 ppm.

The extent of contamination has been defined vertically and horizontally by borings, test pits and the excavation performed. Remaining contamination does not appear to be migrating through the soil column down to the water table. The low amount of contamination remaining does not appear to demonstrate a risk.

Based on results and conclusions presented within this report, Environmental Professionals ltd. recommends that no further investigation be performed at the site and that the site be considered for closure by the WDNR Close-out Committee.

Groundwater Contamination

Groundwater quality at this site has not been impacted by the limited contamination.

RECOMMENDATIONS

Based on the results and conclusions presented above, Environmental Professionals ltd. recommends that no further investigation be performed and that the site be considered for closure by the WDNR Close-out Committee.

REFERENCES

Soils of Wisconsin Map, University of Wisconsin-Extension
Geological and Natural History Survey, 1968

USDA, Soil Conservation Service, Soil Survey of Waukesha
County, Wisconsin

USGS Topographical Map Waukesha, Waukesha Quad, 1958
(Photorevised 1971 & 1976)

USEPA "Field Measurements, Dependable Data When You Need It."
September 1990

Wisconsin Department of Natural Resources

Wisconsin Department of Natural Resources, Wisconsin
Administrative Code, Environmental Protection, Investigation
and Remediation of Environmental Contamination, Chapters NR
700-736

Wisconsin Department of Natural Resources, Chapter NR 140,
Groundwater Quality, March 1994

Wisconsin Department of Natural Resources, "Guidance for
Conducting Environmental Response Actions," March 1992

Wisconsin Department of Natural Resources, "LUST and Petroleum
Analytical and Quality Assurance Guidance," July 1993

Wisconsin Department of Natural Resources, "Site Assessment
for Underground Storage Tank Technical Guidance." September
1992

Wisconsin Department of Natural Resources, "Groundwater
Sampling Procedures Guidelines," February 1987

TABLES

TABLE 1
Waukesha Concrete Products
2000 South West Avenue
Waukesha, WI
Laboratory Results of Soil Samples

	T-1	T-2	T-5	T-6	T-7	T-10	T-11	
Depth ----- Parameter	(3')	(7')	(5')	(4')	(4')	(5')	(5')	NR 720 Closeout Criteria
DRO (mg/kg)	37	14	82	210	81	124	229	100/250
GRO (mg/kg)	ND	ND	ND	ND	ND	ND	ND	100/250
TOTAL PVOCs	o-Xylenes 203	ND	ND	ND	ND	ND	ND	4,100
Comments								

Comments:

NOTE: All values are in ug/kg except DRO, GRO
ND means Not Detected

TABLE 2
Waukesha Concrete Products
2000 South West Avenue
Waukesha, WI
Laboratory Results of Soil Samples

	T-1	T-2	T-5	T-6	T-7	T-10	T-11	
Depth	(3')	(7')	(5')	(4')	(4')	(5')	(5')	
Parameter								
1-methyl Naphthalene	450	140	78	<55	1800	<55	<55	
2-methyl Naphthalene	<55	<55	<55	<55	9000	270	190	
Acenaphthene	<110	<110	<110	<110	<110	<110	<110	
Acenaphthylene	<1400	<1400	<1400	<1400	<1400	<1400	<1400	
Anthracene	91	17	<11	180	93	43	79	
Benzo (a) anthracene	700	110	75	1100	270	120	200	
Benzo (a) pyrene	1100	170	93	1600	330	160	210	
Benzo (b) fluornathene	1100	120	120	1500	330	120	150	
Benzo (ghi) perylene	800	220	140	1100	290	130	150	
Benzo (k) fluoranthene	550	82	62	790	170	85	110	
Chrysene	930	210	110	1600	340	190	200	
Dibenzo (a,h) anthracene	340	26	91	450	97	48	36	
Fluoranthrene	1800	290	430	2600	<74	540	630	
Fluorene	88	40	<36	71	310	66	78	
Indeno (1,2,3-cd) pyrene	800	89	<36	800	<36	110	95	
Naphthalene	<55	<55	<55	<55	740	<55	<55	
Phenanthrene	490	130	120	540	1000	280	340	
Pyrene	1300	240	170	1900	500	270	400	
Comments								

Comments:

NOTE: All values are in ug/kg
 ND means Not Detected

TABLE 3
Waukesha Concrete Products
2000 South West Avenue
Waukesha, WI
Site Investigation Soil Screening Results 5/29/96

Boring ID		Depth (feet)			OVM (ppm)	
T-1	South Sidewall	3'			<1	
T-2	South Bottom	7'			<1	
T-3	South Sidewall	3'			<1	
T-4	South Sidewall	3'			<1	
T-5	West Bottom	5'			<1	
T-6	West Sidewall	4'			<1	
T-7	North Sidewall	4'			<1	
T-8	North Sidewall	4'			<1	
T-9	North Sidewall	4'			<1	
T-10	East Bottom	6'			<1	
T-11	East Sidewall	5'			<1	

NOTES: 1). Calibration Date: 5/29/96

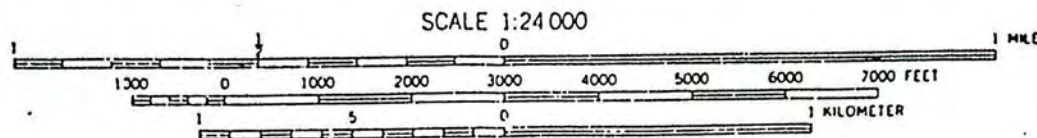
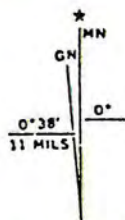
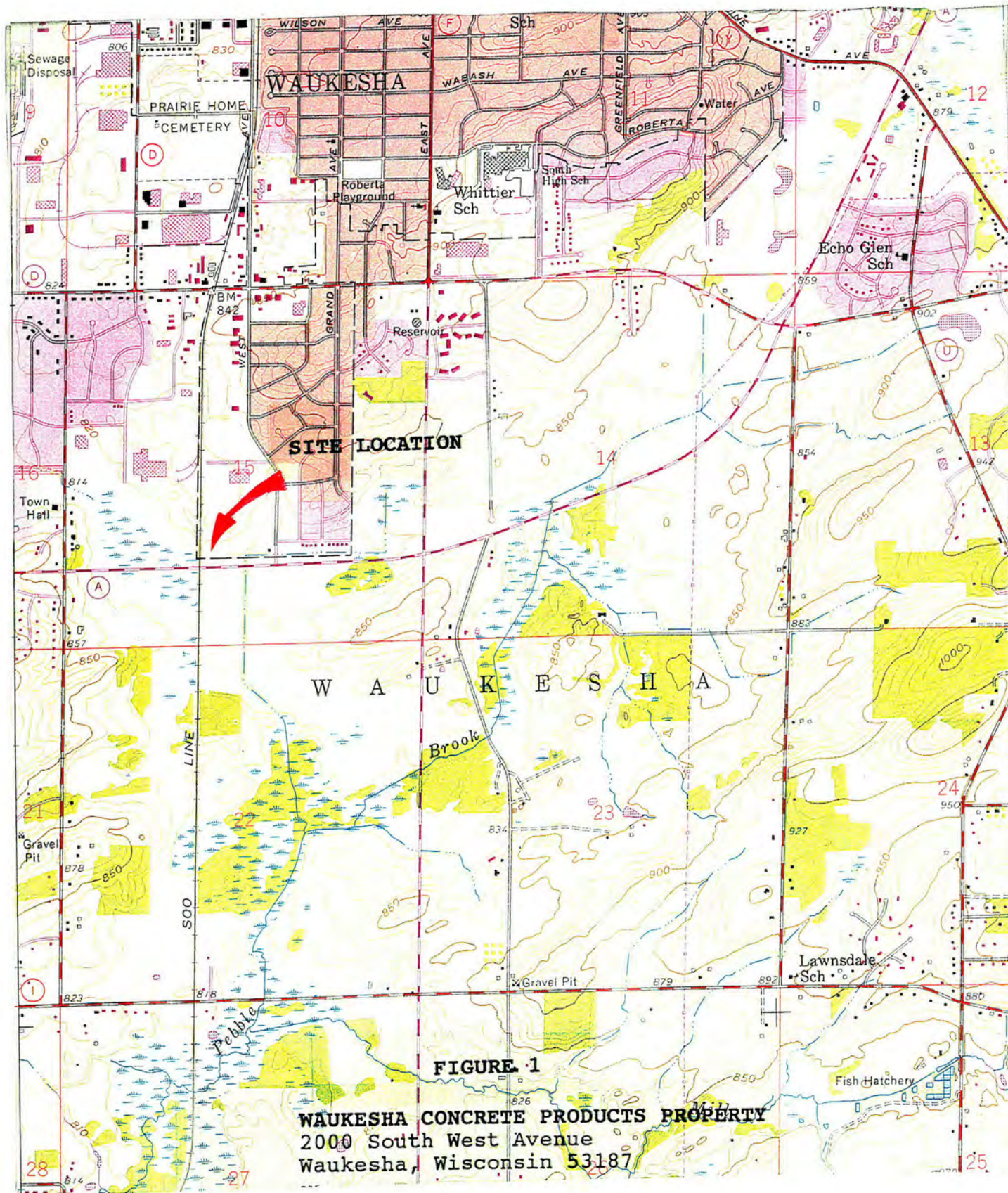
2). Weather Conditions: Sunny, West Winds at @10 mph

3). EPL Job #: 96-156

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FIGURES

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CONTOUR INTERVAL 10 FEET
 NATIONAL GEODETIC VERTICAL DATUM OF 1929

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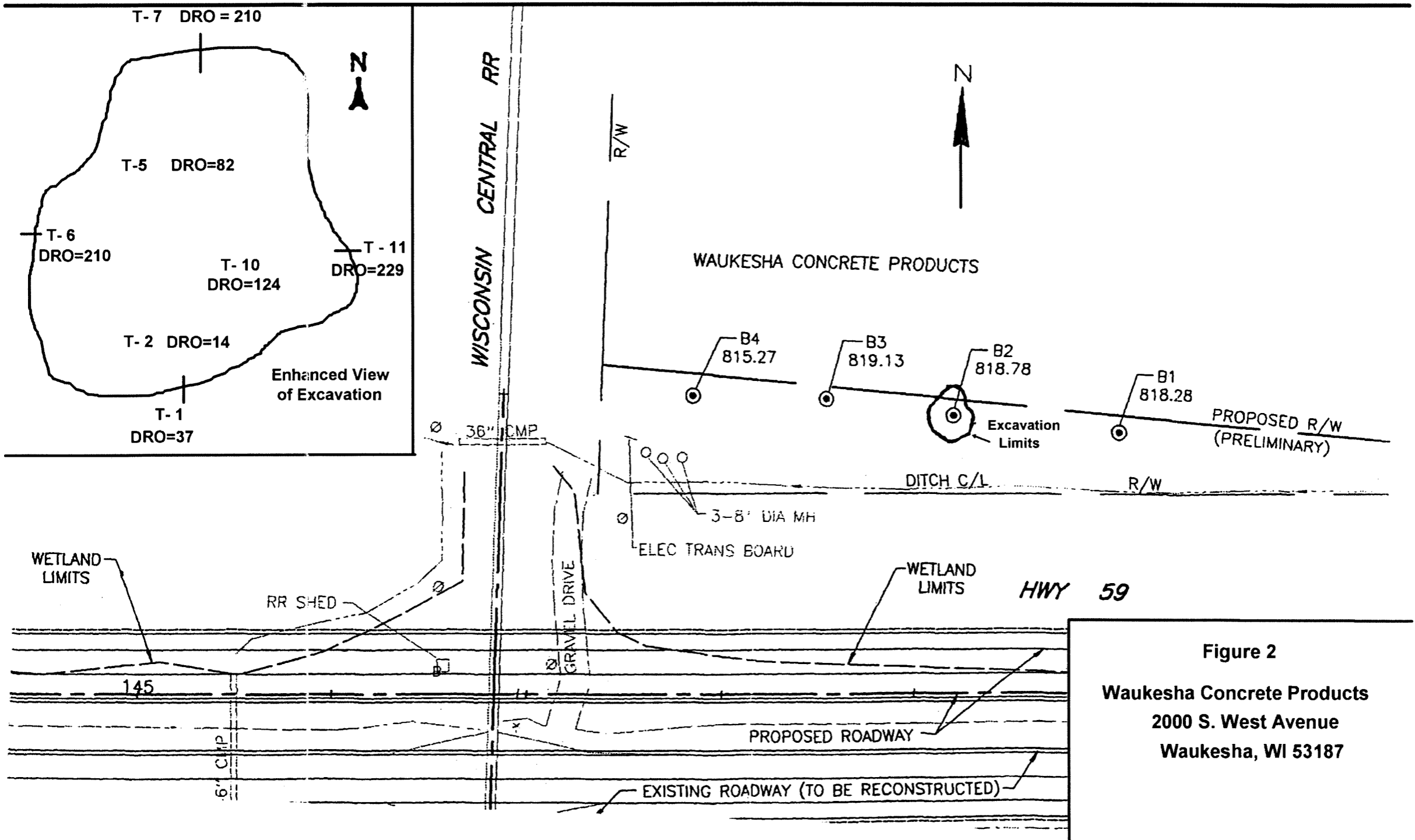


Figure 2
Waukesha Concrete Products
2000 S. West Avenue
Waukesha, WI 53187

METROPOLITAN ENGINEERING, INC.
ENGINEERS - LAND SURVEYORS

20875 CROSSROADS CIRCLE, SUITE 150 WAUKESHA, WI 53186
(414) 782-2221 FAX 782-4426

PLAT OF SURVEY

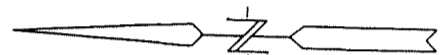
PREPARED FOR: WAUKESHA CONCRETE PRODUCTS

LOCATION: STH # 59, Waukesha, Wisconsin

LEGAL DESCRIPTION: LOT 1, BLOCK 13, in SUNSET HEIGHTS SUBDIVISION, being a part of the NE 1/4, SE 1/4, NW 1/4, and SW 1/4 of Section 15, T 6 N, R 19 E, in the City of Waukesha, Waukesha County, Wisconsin.

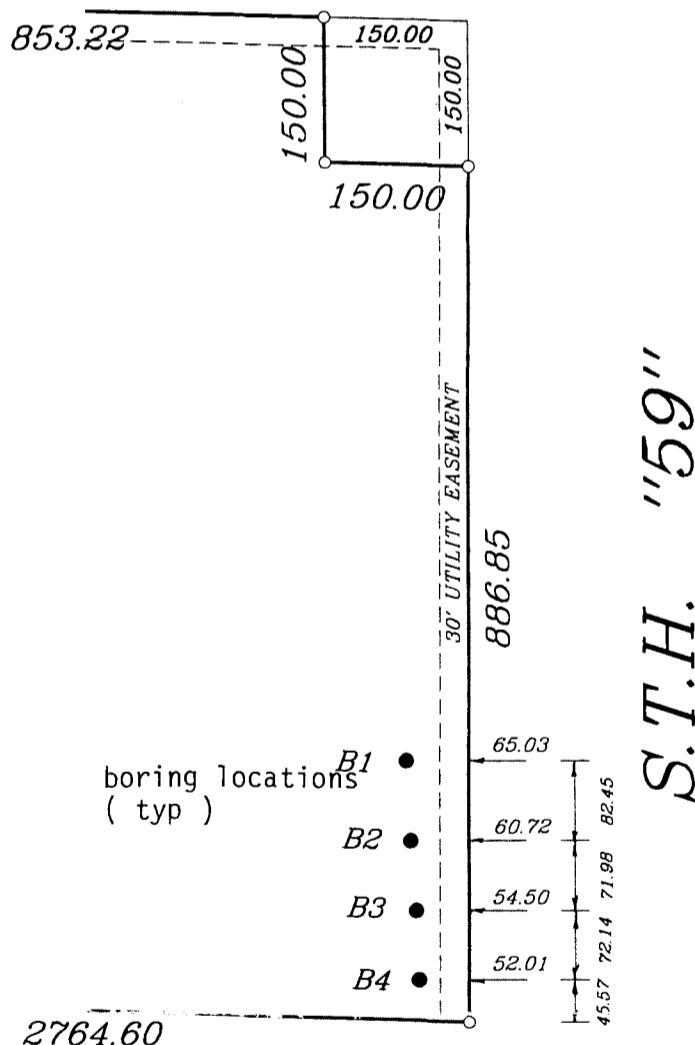
May 2, 1996

Survey No. 960251

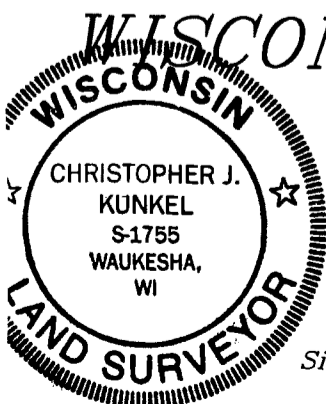


SCALE: 1" = 200'

S. WEST AVENUE



WISCONSIN CENTRAL RR

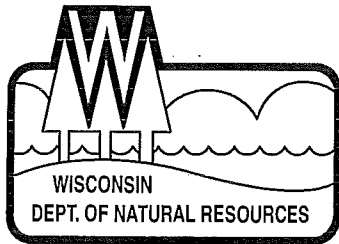


I hereby certify that I have surveyed the above described property and the above map is a true representation thereof and shows the size and location of the property, its exterior boundaries, the location of all visible structures and dimensions of all principal buildings thereon, boundary fences, apparent easements, roadway and visible encroachments, if any. This survey is made for the present owners of the property, and also those who purchase, mortgage, or guarantee, the title thereto within one (1) year from date hereof.

Signed

Christopher J. Kunkel

CHRISTOPHER J. KUNKEL REGISTERED LAND SURVEYOR S-1755



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Gloria L. McCutchen, Regional Director

Waukesha Service Center
141 NW Barstow Street, Room 180
Waukesha, Wisconsin 53188
Telephone 262-574-2100
FAX 262-574-2128

February 25, 2010

Mr. Michael Allan
Wal-Mart Real Estate Business Trust
2001 Southeast 10th Avenue
Bentonville, AR 72716

Subject: Requirements to Achieve Case Closure/Opening Additional Case for Lot 2
Former Cretex Concrete Products Midwest, Inc.
2000-2002 S. West Avenue, Waukesha, WI
FID# 268354570, BRRTS# 02-68-552746, BRRTS# 02-68-554922 (Lot 2)

Dear Mr. Allan:

On December 8, 2009, the Wisconsin Department of Natural Resources (the Department) received the case closure request that was prepared by Professional Service Industries, Inc. (PSI) for the case at the above referenced property. The Department reviews environmental remediation cases for compliance with state rules and statutes to maintain consistency in the closure of these cases. After careful review of your closure request, the Department has denied closure for the case at the property because additional requirements must be met. The case closure issue is discussed in the first part of this letter.

The Department has also reconsidered Michael Simpson's November 17, 2008 request to divide the current environmental case into two separate cases. At that time, Mr. Simpson's proposal was to assign the current BRRTS# 02-68-552746 to the property Wal-Mart was interested in developing, which includes Lot 1 and Outlot 1 on Certified Survey Map (CSM) No. 10488. The remaining portion of the property, or Lot 2 on CSM No. 10488, would not be redeveloped in the same timeframe as Lot 1 and Outlot 1, and would be assigned a separate BRRTS case number. The Department has decided to honor Mr. Simpson's request. The details for the second case are described in the second part of this letter.

Case Closure Request

The Department agrees with the approach (i.e. capping the site, as a land use control) your consultant is taking to close the case; however, the Department cannot close or conditionally close the case unless the cap is in place. The Department can only conditionally close a case when minor tasks have not been completed for a site, such as monitoring well abandonment, disposal of investigative derived waste or purge water, or preparation of a cap maintenance plan.

In addition to installing the cap, please address the following issues and your case (02-68-552746) will be eligible for case closure:

- Please have your consultant prepare a map that illustrates what type of cap is present at the surface across the property. This map of the cap can be similar to the Site Paving and Striping Plan map, but should be simplified to show the locations of the building, pavement and soil cap.
- In the Building/Cap and Soil Cover Barrier Maintenance Plan, it is stated that twelve inches of topsoil will be placed in the landscaped islands/planting beds/lawn area of Lot 1 as the soil cap. The Department requires the surface of the soil cap be covered to prevent erosion. It is understood that grass will be planted in the lawn area, but specify what will be present in the planting beds & landscaped islands. The Department requires the surface of the soil cap be covered to prevent erosion. If vegetation doesn't cover the entire surface of the soil cap, wood chips or gravel may be used. Refer to the Department's January 2007 publication (PUB-RR-709) entitled *Guidance for Cover Systems as Soil Performance Standard Remedies* for additional information regarding soil caps. Specify in the Building/Cap and soil Cover Barrier Maintenance Plan what will be present at the surface above the soil cap. Also, if vegetation is not used, specify the thickness of the material to be used at the surface of the soil cap.
- All maps for this case (BRRTS#02-68-552746) to be included on the GIS Registry should be revised to show the property boundaries as including only Lot 1 and Outlot 1 on CSM No. 10488.
- Figure 3, which is the Soil Contamination Contour Map in the GIS packet, should be modified. Your consultant should remove the contour and rename it Soil Contamination Map.

The Department would like to clarify a point regarding the source of the contamination at the property. In the Case Summary from the case closure request, there is no discussion of the source of the contamination at the property. It is the Department's understanding from the October 30, 2008 meeting regarding the site that the source of the contamination is fill used on the property. Although the extent of impacted fill on the property is unknown, the Department agreed that additional investigation would not be required as long as the entire property was capped.

Based on the groundwater sampling data that has been collected for the site, the Department will grant an exemption for the exceedances of s. NR 140.10, Wis. Adm. Code, preventive action limits for lead, arsenic, tetrachloroethene, benzo(a)pyrene, benzo(b)fluoranthene and chrysene. The Department is not requesting additional groundwater monitoring for the case. The groundwater monitoring wells should be properly abandoned in accordance with s. NR141.25, Wis. Adm. Code.

Newly Opened Case for Lot 2

The Department is opening a new case (BRRTS# 02-68-554922) for the contamination present on Lot 2 on CSM No. 10488 and is not sending a separate responsible party letter for this case. This letter in combination with the original responsible party letter (dated November 4, 2008 and issued to Highway 59 West Limited Partnership) will serve as notice of your legal responsibility for investigating and restoring the environment at Lot 2 on CCM No. 10488 under Section 292.11, Wisconsin Statutes.

As agreed for the original case (BRRTS# 02-68-552746), the Department is not requiring additional soil or groundwater investigation for this case (BRRTS# 02-68-554922) as long as the entire property is capped.

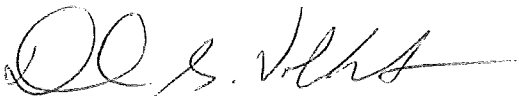
Lot 2 on CSM No. 10488 is not being developed by Wal-Mart Real Estate Business Trust at this time. The building/pavement/soil cap will also not be installed at this time; however, the lot will be covered with vegetation to prevent erosion until the property is developed and a permanent cap can be installed. If it is observed that the vegetation does not grow across the entire property, additional vegetation must be planted. Safeguards should also be taken to restrict public access to Lot 2. At a minimum signage should be posted to keep people off Lot 2.

After the site is developed and the cap is installed, the case for Lot 2 (BRRTS# 02-68-554922) will be eligible for closure. Case closure must be requested with the accompanying GIS Registry packet and appropriate review fees.

Please submit the future documentation for each case with the site FID# and BRRTS# noted to:
Victoria Stovall, Wisconsin Department of Natural Resources, 2300 N. Dr. ML King Dr.,
Milwaukee, WI 53212.

The Department appreciates your efforts to restore the environment at this site. If you have any questions regarding this letter, please contact me at the letterhead address or (262) 574-2166.

Sincerely,



David G. Volkert, P.G.
Hydrogeologist
Bureau for Remediation & Redevelopment

cc: Michael Simpson, Reinhart, et al
Scott Prill, Reinhart, et al
Kerry Hardin, R.A. Smith National, Inc.
Matthew Dahlem, PSI
SER File

Wisconsin Department of Natural Resources

Environmental Cleanup & Brownfields Redevelopment

BRRTS on the Web

Click the Location Name below to view the Location Details page for this Activity. Other Activities, if present, may be viewed from that page.

Basic Search >> 03-68-000803 Activity Details

03-68-000803 WAUKESHA CONCRETE PROCUCTS						
CLOSED LUST						
Location Name (Click Location Name to View Location Details)				County		WDNR Region
WALMART SUPERCENTER #1635				WAUKESHA		SOUTHEAST
Address				Municipality		
2000 S WEST AVE				WAUKESHA		
Public Land Survey System			Latitude	Google Maps	RR Sites Map	
NE 1/4 of the SW 1/4 of Sec 15, T06N, R19E			42.979348	CLICK TO VIEW	CLICK TO VIEW	
Additional Location Description			Longitude	Facility ID	Size (Acres)	
			-88.2377722	268354570	UNKNOWN	
Jurisdiction	PECFA No.	EPA Cerclis ID	Start Date	End Date	Last Action	
DNR RR	53186-7516-00		1990-06-29	1991-10-15	1991-10-15	
Characteristics						
PECFA Tracked?	EPA NPL Site?	Eligible for PECFA Funds?	Above Ground Storage Tank?	Drycleaner?	Co-Contamination?	On GIS Registry?
Yes	No	Yes	No	No	No	No
Actions						
Place Cursor Over Action Code to View Description						
Date	Code	Name		Comment		
1990-06-27	2	RP Letter Sent		RP LETTER		
1990-06-29	1	Notification				
1990-10-02	2	RP Letter Sent		RP LETTER, LOW		
1991-10-15	11	Activity Closed				
Impacts						
Type			Comment			
Soil Contamination			-			
Substances						
Substance		Type		Amount Released		Units
Gasoline - Unleaded and Leaded		Petroleum				
Diesel Fuel		Petroleum				
Who						
Role		Name/Address				
Responsible Party		WAUKESHA CONCRETE PROD 2000 S WEST AVE WAUKESHA, WI 53186				

For Additional Information, Please Contact	
CHUE YEE YANG 414-263-8366 chueyee.yang@wisconsin.gov	

BRRTS data comes from various sources, both internal and external to DNR. There may be omissions and errors in the data and delays in updating new information. Please see the [disclaimers page](#) for more information. We welcome your [Feedback](#).

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Environmental Cleanup & Brownfields Redevelopment

BRRTS on the Web

Click the Location Name below to view the Location Details page for this Activity. Other Activities, if present, may be viewed from that page.

Basic Search >> 07-68-552361 Activity Details

07-68-552361 WAL MART SUPERCENTER # 1635-05 PROPOSED <div style="background-color: #8B4513; color: white; padding: 2px 5px; display: inline-block; margin: 5px auto; width: 100px;">GENERAL PROP</div>						
Location Name (Click Location Name to View Location Details)				County	WDNR Region	
WALMART SUPERCENTER #1635				WAUKESHA	SOUTHEAST	
Address				Municipality		
2000 S WEST AVE				WAUKESHA		
Public Land Survey System			Latitude	Google Maps	RR Sites Map	
Additional Location Description			Longitude	Facility ID	Size (Acres)	
				268354570	UNKNOWN	
Jurisdiction	PECFA No.	EPA Cerclis ID	Start Date	End Date	Last Action	
DNR RR					2008-11-25	
Characteristics						
PECFA Tracked?	EPA NPL Site?	Eligible for PECFA Funds?	Above Ground Storage Tank?	Drycleaner?	Co-Contamination?	On GIS Registry?
No	No	No	No	No	No	No
Actions						
Place Cursor Over Action Code to View Description						
Date	Code	Name	Comment			
2008-09-16	401	Case by Case Exemption Request for Historic Fill Site w/Fee	REC'D CK# 68530 \$500.00			
2008-10-16	99	Miscellaneous	REQ. ADD. GAS MONITORING WELLS & SAMPLING			
2008-11-25	99	Miscellaneous	REC'D METHANE RESULTS/EXEMP. FOR DEVELOP. AT A HISTORIC FILL SITE			
2008-11-25	402	Approval to Build on Historic Fill				
Who						
Role		Name/Address				
For Additional Information, Please Contact CHUE YEE YANG 414-263-8366 chueyee.yang@wisconsin.gov						

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GREELEY AND HANSEN

741 N. Grand Ave., Suite 308
Waukesha, WI 53186

Appendix II

4-230 D3 Phase II Environmental Site Assessment
Report – Site 12.51 – 1011 Sentry Drive;
Waukesha, Wisconsin

(NO TEXT FOR THIS PAGE)



February 8, 2019

Mr. Craig Bayerl
City of Waukesha
130 Delafield Street
Waukesha, WI 53188

Subject: Approval to Manage Contaminated Material under Wis. Admin. Code § NR 718.12
Site 12.51 for the Waukesha Water Diversion Pipeline Project, portion of Sentry Drive adjacent to 1011
Sentry Drive, Waukesha, WI
DNR BRRTS Activity #: 04-68-261966 (FID # 268253150) and 07-68-580851 (FID # 268005100)

Dear Mr. Bayerl:

On January 17, 2019, Donna Volk of Ramboll US Corporation (Ramboll) submitted the "4-230 D3 Phase II Environmental Site Assessment Report" (Report). The Report describes the soil sampling activities conducted to determine if a hazardous substance discharge which occurred at the 1011 Sentry Drive property impacted the adjacent Sentry Drive right of way (ROW). Sampling confirmed that fill soil located within the ROW is contaminated with polycyclic aromatic hydrocarbons (PAHs). Contaminated soil excavated from a depth of zero to five feet within this portion of the ROW, an estimated 325 yards, is proposed to be reused within the excavation in accordance with Wis. Admin. Code § NR 718.12.

Wis. Admin. Code § NR 718.12 Exemption

This letter grants an exemption from the solid waste requirements in Wis. Stats. ch. 289 and Wis. Admin. Code chs. NR 500 to NR 538 for the proposed material management activity. Approval of the exemption is based on the following:

- 1) Managing contaminated soil in the area identified on Figure No. 3 of the Report will meet the locational criteria listed under Wis. Admin. Code § NR 718.12(1)(c), with the exception that a portion of the material will be placed within 3 feet of the high groundwater level. In consideration that soil underlying the fill material is of low permeability, the reuse of the material will not change the extent of contamination, and that sampling has indicated that soil at depths closer to the water table are not impacted under current conditions, the DNR grants an exemption to the location criteria of Wis. Admin. Code § 718.12(1)(c)5.
- 2) Soil samples have been collected for analysis of contaminants thought to be potentially present in this area based available information of environmental contamination including volatile organic compounds (VOCs), PAHs, and metals. Based on an estimated volume of 325 cubic yards of material, and a sampling frequency of 1 sample per 40 cubic yards, the sampling protocol described in Wis. Admin. Code § NR 718.12(1)(e) has been met.
- 3) A complete soil management plan, as defined by Wis. Admin. Code §§ NR 718.12(2)(b) and (c), has been provided to the DNR.
- 4) Per Wis. Admin. Code § NR 718.12(2), the DNR was provided with at least 7 days' notice prior to commencing the proposed material management.

- 5) The proposed management of contaminated material at the Site 12.51 (12.51?) is expected to meet the criteria of Wis. Admin. Code §§ NR 726.13(1)(b)1 to 5.

Other Information

- 1) If soil managed under this exemption is excavated again in the future, the property owner or right of way holder at the time of excavation will need to determine whether the material is considered solid or hazardous waste and ensure that any storage, treatment or disposal is in compliance with applicable standards and rules. Contaminated soil may be managed in accordance with Wis. Admin. Code ch. NR 718 with prior DNR approval. Special precautions may need to be taken to prevent a direct contact health threat to humans when contaminated soil is excavated.
- 2) Any hazardous substance discharge discovered during material management activities must be reported to the DNR following the requirements of Wis. Admin. Code ch. NR 706.
- 3) Documentation describing how soil was managed in this portion of the project, as required by Wis. Admin. Code § NR 724.15(3), must be provided within 60 days of the completion of soil management activities.
- 4) Any contaminated material that is excavated or otherwise disturbed during this project, not covered under this or another exemption, must be managed in compliance with the requirements of Wis. Admin. Code chs. NR 500 through NR 538, the solid waste rules administered by the DNR's Waste and Materials Management Program. Managing waste in a way that does not comply with these rules may be considered to have caused a hazardous substance discharge that would be required to be addressed following the process outlined in Wis. Admin. Code chs. NR 700 to NR 750.
- 5) The Great Water Alliance is responsible for obtaining any local, federal, or other applicable state permits to carry out the project.

Soil contamination in this portion of the project has been attributed to fill material used within this portion of the right of way. The DNR recommends that if similarly impacted material is discovered outside of the limits of Site 12.51 that precautions are made to ensure the material is managed appropriately after being excavated. A suitable management strategy for the material would be to reuse it within the right of way. Unless contaminated soil is expected to meet the definition of exempt waste, it cannot be managed outside of a right of way at a location not licensed to accept that material without prior DNR approval. It is ultimately the responsibility of the Great Water Alliance, and any party who excavates within the ROW in the future, to determine whether non-exempt waste will be generated during this construction project and how it will be managed.

We appreciate your efforts to protect the environment at this site. Please contact me, the DNR project manager, if you have any questions regarding this approval decision, or if the proposed soil management activities will not occur within 18 months of this letter. I can be reached at (608) 266-0941, or by email at paul.grittner@wisconsin.gov.

Sincerely,



Paul Grittner
Contaminated Material Management Specialist
Remediation & Redevelopment Program

Attachment: Figure No. 3, Special Handling Area - Site 12.51 (January 14, 2019)

cc: Donna Volk, Ramboll US Corporation, 175 N Corporate Drive, Suite 160, Brookfield, WI 53046 (electronic)
Kelly Zylstra, Waukesha Water Utility, 115 Delafield Street, P.O. Box 1648, Waukesha, WI 53188

Aerials provided by Greeley and Hansen on January 26, 2018.
Milwaukee aerials were last updated December 14, 2017.
Waukesha aerials were last updated November 15, 2016.

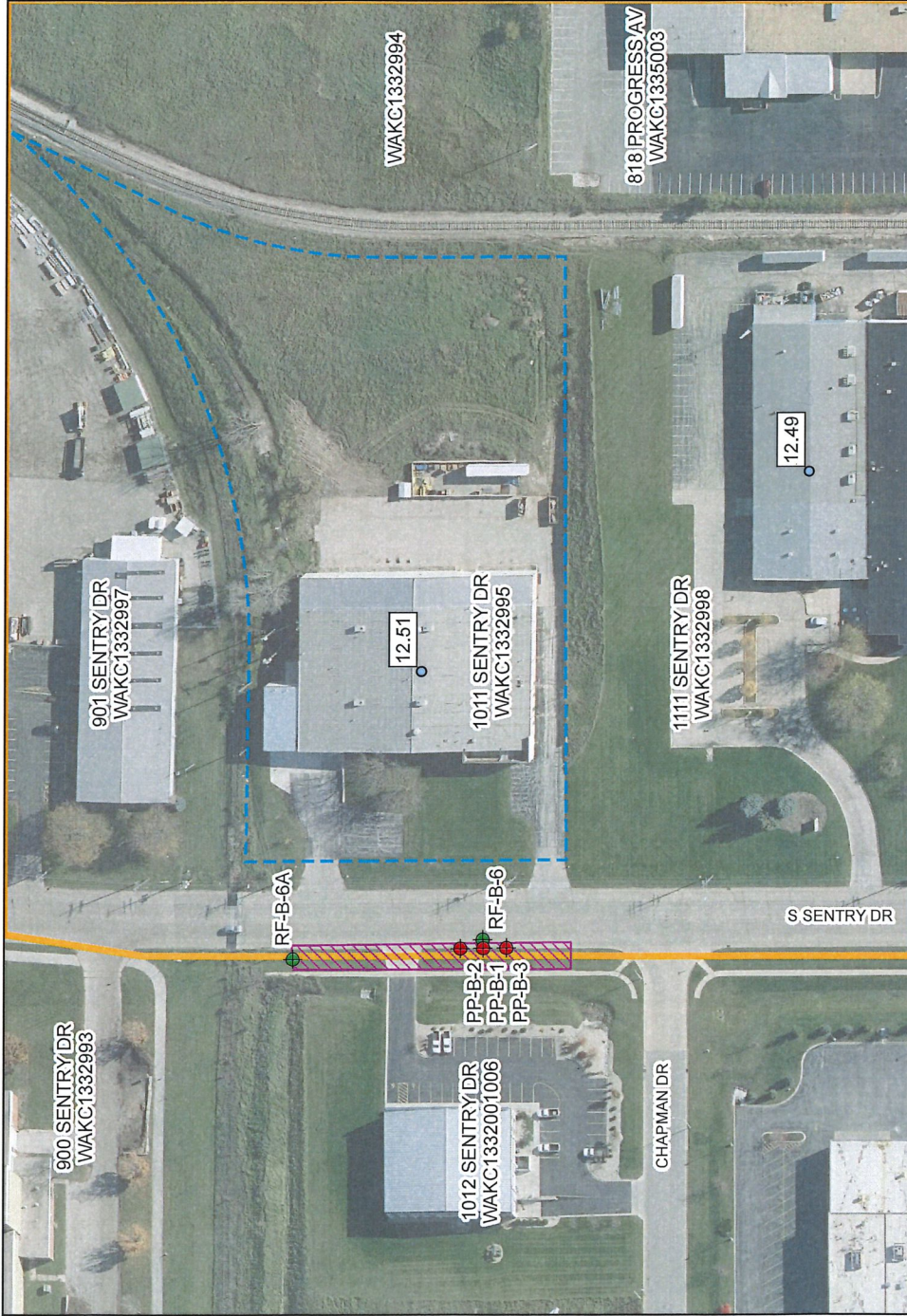


FIGURE NO. 3

Legend

- Ramboll Boring Location
- Geotechnical Boring Location
- Listed Environmental Site
- BRRS Boundary
- Parcel Boundary
- Special Handling Area
- Return Flow Pipeline Route Alternative 3

Note: Field screening and environmental samples collected at RF-B-6 and RF-B-6A.



Parcel and address information acquired from Waukesha County.



GREELEY AND HANSEN
741 N. Grand Avenue, Suite 308
Waukesha, Wisconsin 53186

RAMBOLL
175 N. Corporate Drive, Suite 160
Brookfield, Wisconsin 53045

Waukesha, Wisconsin
Great Lakes Water Supply Program
Special Handling Area - Site 12.51
1011 Sentry Drive, Waukesha, WI
Date: 1/14/2019

Great Lakes Water Supply Program



4-230 D3 Phase II Environmental Site Assessment Report

Site 12.51 – 1011 Sentry Drive; Waukesha, WI
January 2019

(NO TEXT FOR THIS PAGE)

I, Kathryn Huibregtse, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



Signature

Title: Principal

P.E. License Number 18319

P.E. Stamp

I, Donna Volk, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



Signature

Title: Managing Consultant

License Number 246-013

January 14, 2019
Date

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PROGRAM TEAM MEMBER CONSULTANTS:



RAMBOLL

SECTION 1 Introduction

The Great Water Alliance (Program) developed six route alignments for both a Water Supply and Return Flow Pipeline in 2016 and selected the three most viable route alternative alignments, designated as Route Alternatives 2, 3, and 4, for further review on a wide range of criteria. In the first half of 2017, Ramboll US Corporation (Ramboll) performed a desktop review on the three route alternatives for the Return Flow Pipeline regarding the financial and schedule implications of encountering contaminated soil and groundwater during construction. The goal of the desktop review was to identify sites where contamination was present and either avoid or mitigate the costs and possible schedule delays associated with management of hazardous materials. The Program then combined the findings of the contaminated materials desktop review with other technical evaluations during their selection of the preferred route for the Return Flow Pipeline. Based on this evaluation, Route Alternative 3 was selected by the Program as the preferred route for the Return Flow Pipeline.

During the second half of 2017, Ramboll conducted focused Phase II Environmental Site Assessments (ESAs) in the public right-of-way adjacent to 23 sites/clusters of sites identified along the Return Flow portion of Route Alternative 3 during the desktop environmental review. The goal of conducting Phase II ESAs is to identify whether impacts exist within the right-of-way from known or likely sources of contamination on or near the pipeline alignment that could affect the route design, construction costs for remediation, or project schedule. As discussed in the draft *Program-Wide Contaminated Soil and Groundwater Management Plan (DEL 3-130 D3)*, Phase II investigation reports will also include site-specific proposed soil and groundwater handling procedures to supplement the more general Program-wide handling procedures discussed therein. Site-specific material handling procedures will include proposed reuse, temporary staging, and/or disposal methods recommended based on the degree of impacts confirmed at the site. As needed, Phase II reports will also include proposed long-term direct contact protection approaches consistent with the site-specific land use in the right-of-way. These direct contact barriers will be placed in conjunction with construction, backfill, and revegetation activities for the pipeline installation. Pipeline construction is anticipated to begin in late 2019 or early 2020.

This report focuses on the Phase II ESA within the right-of-way across Sentry Drive from the property located at 1011 Sentry Drive, Waukesha, Wisconsin (Site 12.51). The property is identified by the Wisconsin Department of Natural Resources (WDNR) as Bureau for Remediation and Redevelopment Tracking System (BRRTS) Number 04-68-261966. BRRTS numbers with the 04 designation are assigned by the WDNR to track sites where spills have been reported. **Sections 3 to 7** of this report provide background and rationale for conducting a focused Phase II ESA at the right-of-way adjacent to Site 12.51; scope and methods of the ESA; results of the ESA; and conclusions regarding the impact of contaminated materials that will be encountered during construction. Based on the results of this investigation, recommendations for soil management during construction in accordance with Wisconsin Administrative Code (WAC) NR 718.12(1) are provided in **Section 8** of this report.

SECTION 2 Involved Parties

The following parties are involved with the Sites:

Program Owner: Waukesha Water Utility
 115 Delafield Street
 P.O. Box 1648
 Waukesha, WI 53187
 Contact: Kelly Zylstra, (262) 409-4430

Program Design Engineer: Greeley and Hansen
 741 North Grand Avenue, Suite 308
 Waukesha, WI 53186
 Contact: Catharine Richardson, (312) 578-2347

Environmental Consultant: Ramboll US Corporation
 175 North Corporate Drive, Suite 160
 Brookfield, WI 53045
 Contact: Donna Volk, (262) 901-3504

Drilling Contractors: On-site Environmental Services, Inc.
 P.O. Box 280
 Sun Prairie, WI 53590
 Contact: Kim Kapugi, (608) 837-8992

 GESTRA Engineering, Inc.
 191 West Edgerton Avenue
 Milwaukee, WI 53207
 Contact: Scott Miller, (414) 234-9111

Laboratories: ALS Environmental
 3352 128th Avenue
 Holland, MI 49424
 Contact: Chad Whelton, (616) 582-5201

 Pace Analytical Laboratories
 1241 Bellevue Street, Suite 9
 Green Bay, WI 54302
 Contact: Steve Mleczo, (920) 469-2436

Right-of-Way Holder: City of Waukesha
 130 Delafield Street
 Waukesha, WI 53188
 Contact: Craig Bayerl, (262) 524-3600

Agency: Wisconsin Department of Natural Resources
 101 South Webster Street
 Madison, WI 53703
 Contact: Paul Grittner, (608) 266-0941

SECTION 3 Site Background

Ramboll identified the Site 12.51 located at 1011 Sentry Drive, Waukesha, Wisconsin, as part of the completion of the *Contaminated Materials Technical Memorandum (4-120 D1)*, dated January 2018. Site 12.51 is located along the east side of Sentry Drive for a total distance of approximately 280 feet; whereas the Return Flow Pipeline is anticipated to be on the west side of Sentry Drive. The site is currently zoned as manufacturing and owned by Keeley Realty Waukesha LLC. Site 04-68-261966 was identified in the desktop evaluation due to a report of impacts to site soil and surface water which were discovered while trenching for a water utility in 1997; however, the amount, contaminant type, and exact location of the release was not identified in the records. Following the discovery of the contamination in 1997, no site investigation was required by the WDNR. Pertinent information from WDNR files is provided as **Appendix C**.

Based on the site being located in a highly industrialized area, historical ignitable waste generation at the site, and because a site investigation was not conducted following the discovery of contamination, Phase II investigation activities were conducted to identify whether impacts exist within the right-of-way in the area of the proposed Return Flow Pipeline.

SECTION 4 Project Approach and Scope of Investigation

There were two primary factors that contributed to the recommendation for a Phase II Site Investigation to be conducted at Site 12.51, including:

- **Pertinent Data Gap:** The spill location could not be confirmed based on the information provided in historical environmental records.
- **Confirmed Release:** A confirmed release of an unspecified substance to soil and surface water has been identified.

Based on this information, Ramboll proposed collecting soil samples from two locations within the right-of-way of Sentry Drive across the street from the western boundary of the Site 12.51, in the location of the proposed Return Flow Pipeline. This work was coordinated with one of the Program's geotechnical team members Gestra Engineering, Inc. (Gestra) to reduce overall cost to the Program and disruption in the area of the site. Ramboll proposed to collect one to two soil samples from each boring; one from between approximately 3 to 4 feet below ground surface (bgs), in the direct contact interval, and one from between approximately 10 and 12 feet bgs, slightly above the presumed shallow groundwater table. Soil sample depth intervals were adjusted based on professional judgement to address conditions encountered in the field.

Based on the soil analytical results obtained from the samples collected in September 2017, Ramboll recommended that soil samples be collected from three additional soil borings at the site to confirm and delineate the extent of polycyclic aromatic hydrocarbon (PAH) impacts encountered at soil boring RF-B-6. Soil samples collected from PP-B-1 were to be used to confirm the PAH impacts identified in RF-B-6, while samples collected from PP-B-2 and PP-B-3 were to be used for delineation if PAH-impacted soil was encountered in PP-B-1. Ramboll proposed to collect two soil samples from each boring; one from between approximately 2 to 3 feet bgs, in the direct contact interval, and one from between approximately 4 and 5 feet bgs. Soil sample depth intervals were adjusted based on professional judgement to address conditions encountered in the field.

The scope was completed, and **Table 4-1** presents a summary of the soil sampling and analysis conducted at this site.

Table 4-1 – Soil Boring and Analytical Testing Information

Boring Location/ Designation	Date	Boring Depth (feet bgs)	Soil	
			Sample Depth (feet bgs)	Analytical Testing
RF-B-6A ¹	9/6/2017	21	2 to 3.5	Volatile Organic Compounds (VOCs), PAHs, Resource Conservation and Recovery Act (RCRA) metals
			9.5 to 11	VOCs, PAHs, RCRA metals
RF-B-6 ¹	9/6/2017	16	2 to 3.5	VOCs, PAHs, RCRA metals
			12 to 13.5	VOCs, PAHs, RCRA metals
PP-B-1	4/19/2018	5	2 to 3	PAHs
			4 to 5	PAHs

Boring Location/ Designation	Date	Boring Depth (feet bgs)	Soil	
			Sample Depth (feet bgs)	Analytical Testing
PP-B-2	4/19/2018	5	2 to 3	PAHs
			4 to 5	PAHs
PP-B-3	4/19/2018	5	2 to 3	PAHs
			4 to 5	PAHs

Notes:

1. Geotechnical borings were advanced by Gestra. Ramboll was on site to conduct analytical sampling.

SECTION 5 Investigation Methodology

The following sections describe the methodology that was utilized during performance of the Phase II activities at the site located at 1011 Sentry Drive, Waukesha, Wisconsin. Soil boring locations are shown on **Figure 1**.

5.1 Investigation Preparatory Activities

5.1.1 Health and Safety

Prior to on-site activities in September 2017, a site-specific Health and Safety Plan (HASP) was developed in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910 for the proposed field activities. Ramboll reviewed the site-specific HASP with all field personnel prior to commencing the field activities.

Prior to additional on-site activities in April 2018, the previously used site-specific HASP was updated to reflect additional site investigation activities. Ramboll reviewed the site-specific HASP with all field personnel prior to commencing the field activities.

5.1.2 Location of Utilities

Ramboll was not responsible for contacting Digger's Hotline for the location of public utilities in the area of investigation prior to initiating the sub-surface work conducted in September 2017. As all of the September 2017 subsurface work was coordinated with Gestra at this site, the geotechnical contractor was responsible for contacting Digger's Hotline for this work. Ramboll contacted Digger's Hotline for the location of public utilities in the area of investigation prior to initiating the additional sub-surface work conducted in April 2018. A private utility locator was also retained to confirm the location of underground utilities in the vicinity of the proposed sample locations.

5.1.3 Permitting

This site is located in Waukesha, Wisconsin. Prior to conducting any of the September 2017 subsurface work on public property in this municipality, Gestra secured the necessary permits required to perform work in the public right of way. Prior to conducting any of the April 2018 subsurface work on public property in this municipality, Ramboll secured the necessary permits required to perform work in the public right-of-way. For this site, permits were obtained from the City of Waukesha. Local police, fire, and other agencies were notified of the schedule for subsurface work, as appropriate, by other members of the Program.

5.2 Field Activities

5.2.1 Soil Borings

On September 6, 2017, two geotechnical borings (RF-B-6 and RF-B-6A) were advanced in the public right-of-way along Sentry Drive in locations where previous desktop assessments identified evidence of potential soil or groundwater contamination that could be encountered along the proposed Return Flow Pipeline alignment, and where Ramboll had proposed to collect soil samples. Ramboll coordinated with the geotechnical contractor to collect soil samples from these borings for analysis for chemical analysis. The geotechnical Program team members employed hollow-stem auger drilling to advance soil borings with split-spoon sampling conducted at approximately 2.5-foot intervals. Geotechnical borings were advanced to depths of 16 and 21 feet. Samples were evaluated in the field by a Ramboll representative for visual textural classification and screened for the potential presence of VOCs,

as described below. Select samples were returned to Ramboll offices for packaging/shipment to a subcontract analytical laboratory. Final geotechnical boring log forms and photoionization detector (PID) screening results summary tables are provided in **Appendix A**.

On April 19, 2018, three soil borings (PP-B-1, PP-B-2, and PP-B-3) were advanced in the public right-of-way along South Sentry Drive by On-Site Environmental Services with a Ramboll representative present to guide the field activities, observe and document soil and groundwater conditions, and screen and collect laboratory samples. The soil borings were advanced with a hydraulic probe utilizing a 2-inch diameter drive rod to collect a continuous soil sample. The soil samples were collected inside of a polyethylene sheath inserted into the end of the drive rod. All soil borings were advanced to depths of approximately 5 feet below grade to characterize soils in the depth ranges where impacts had been previously identified in RF-B-6. Soil samples were continuously collected from the borings for visual classification, field screening, and laboratory analysis. The soil samples were described in the field with respect to the soil type, grain size distribution, and color (or discoloration), odor, and moisture content. Observations from the borings were recorded on soil boring log forms, copy provided in **Appendix A**.

5.2.2 Soil Sampling Methods

The soil samples were screened in the field using a 10.6 electron volt (EV) PID to evaluate for the presence of total VOCs. The PID was calibrated in the field according to manufacturer's instructions, using 100 parts per million (ppm) isobutylene span gas and air (zero gas), and checked between each screening event for proper response. The PID readings and visual/olfactory evidence of contamination, if observed, were recorded on the field screening logs included in **Appendix A**.

Soil boring locations were chosen based on the location of the proposed Return Flow Pipeline. Initially, two geotechnical borings coinciding in general with the area of concern were identified for the collection of soil samples for screening and analytical testing. These borings were located approximately 165 feet apart along the right-of-way of Sentry Drive, across the street from the western property boundary of Site 12.51. These locations were selected to determine whether or not residual contamination from the BRRTS incident associated with Site 12.51 exists in the right-of-way of Sentry Drive and would potentially be encountered during the construction of the Return Flow Pipeline. A total of four soil samples were collected from the two borings. Due to PAH impacts identified in the shallow sample collected from geotechnical boring RF-B-6, three additional soil borings were advanced at the site; one boring (PP-B-1) was advanced near RF-B-6 to confirm the impacts previously identified in this boring. Two of the additional soil borings (PP-B-2 and PP-B-3), which were located approximately 20 feet north and south of PP-B-1 respectively, were to be used for delineation if impacts were confirmed in PP-B-1. Collectively, ten samples were collected from the five soil borings (two samples per soil boring).

For the work conducted in September 2017, two subsurface soil samples were collected from each of the soil borings for laboratory analysis. If visual or olfactory evidence or elevated PID readings were noted, a soil sample was collected from the interval at which the most significant impacts were observed. If soil without evidence of impacts was noted at a depth greater than observed impacts, a second sample was collected from this interval to delineate the vertical extent of contamination. If no visual or olfactory evidence or elevated PID readings were noted at any depth interval of a soil boring, a sample was collected from the direct contact interval and the interval most likely to be impacted based on a review of available site documents and field observations, such as apparent depth to groundwater. No elevated PID readings were noted at this site.

For the additional site investigation activities conducted in April 2018, two subsurface soil samples were collected from each of the soil borings for laboratory analysis. For each soil boring, one sample was collected from between

2 and 3 feet bgs (from the direct contact interval) and a second sample from between 4 and 5 feet bgs (bottom of boring). These sample depth intervals were chosen to be at and just below where PAH impacts were previously identified in RF-B-6.

Following soil sample collection activities, the soil borings were abandoned with bentonite in accordance with WAC NR 141.25 requirements. The borings were then completed with a surface patch matching the surrounding ground surface material. Boring abandonment forms are provided in **Appendix A**.

5.2.3 Soil Sample Collection and Laboratory Analysis

The soil samples collected during the September 2017 mobilization were containerized in one laboratory-provided 40-milliliter (mL) glass sample container, preserved with methanol to analyze for VOCs; one 250-mL amber jar to analyze for PAHs; and one 250-mL plastic container to analyze for RCRA metals, and dry weight. Soil samples collected during the additional site investigation mobilization conducted in April 2018 were containerized in a 250-mL amber jar to analyze for PAHs. Following sample collection, each sample container was labeled with the sample location identification, date of sample collection, and intended analysis. The sample containers were then placed in re-sealable plastic bags and packed in an iced, insulated container.

A chain-of-custody form was completed daily after sampling and accompanied the insulated container of samples to the laboratory. The chain-of-custody form was signed by the sampler and completed in a legible manner using waterproof ink. The selected samples were placed on ice and submitted to the laboratory following standard chain-of-custody procedures. Samples were transported to the laboratory via a commercial courier.

The soil samples collected during the September 2017 Phase II site investigation were submitted to ALS Environmental for laboratory analysis. Soil samples were analyzed for the site-specific contaminants of concern. Analyses for soil samples collected include VOCs using United States Environmental Protection Agency (USEPA) Method 8260B, RCRA metals using USEPA Method 6010C, and PAHs using USEPA Method 8270C. One trip blank sample was included in every cooler delivered to the sample courier, and was analyzed for VOCs. Laboratory analytical results are provided in **Appendix B**. The soil samples collected during the April 2018 additional site investigation were submitted to Pace Analytical Services for laboratory analysis. Soil samples were analyzed for the site-specific contaminants of concern that were identified during the September 2017 site investigation activities. Soil samples were analyzed for PAHs using USEPA Method 8270C. Laboratory analytical results are provided in **Appendix B**.

5.3 Investigation Derived Waste Management

Due to the small amount of soil generated during the advancement of the soil borings, excess soils were not generated during field investigations conducted by Ramboll. Soil obtained from soil borings collected using the hydraulic probe was containerized as samples and returned to Ramboll's office to verify classification, and was then disposed of as solid waste, after receipt of analytical testing results.

SECTION 6 Subsurface Assessment Results

6.1 General Soil and Groundwater Conditions

Soils at the site consist of primarily silty sand fill soil consistent with typical roadway basecourse material to depths of approximately 4 to 6.5 feet bgs. There were no non-exempt fill types (such as ash, cinders or foundry sand) noted in the fill soil. The fill soil was underlain by a native brown clayey and silty sand to depths of approximately 7 to 11 feet bgs. Groundwater was encountered between approximately 8 to 10 feet bgs during drilling. Beneath the clayey and silty sand layer, gray silt was encountered to the terminal depth of each of the geotechnical borings (16 and 21 feet). PID readings ranged from 0.0 to 2.3 instrument units (iu) for all samples in each boring.

6.2 Soil Quality Results

The soil analytical results were tabulated and compared to the generic Residual Contaminant Levels (RCLs) published in WAC NR 720, which are based on the protection of human health from direct contact and the protection of groundwater. Naturally occurring compounds were also compared to the Background Threshold Values (BTVs) where established by the WDNR. Detected compounds along with their respective RCLs and BTVs are provided on Table 1.

Soil analytical results from samples collected during the September 2017 site investigation revealed several low-level detections of analyzed parameters in the samples collected from the site. RCRA metals were detected in each of the soil samples collected at the site. Generally, these metals concentrations were below their respective RCLs and/or BTVs. Selenium, which was present at concentrations between 0.51 and 1.0 milligrams per kilogram (mg/kg), exceeded the WAC NR 720 Groundwater Pathway RCL (0.52 mg/kg) in three of the four samples. There is currently no BTV established for selenium; however, based on our evaluation along the Return Flow Pipeline Alternative 3, selenium was detected at similar concentrations across the route. A Program-Wide Background Assessment for Selenium was conducted and was submitted to the WDNR July 10, 2018. In their response of December 14, 2018, the WDNR concluded that the presence of selenium at this site will not be considered a hazardous substance discharge for the purposes of determining reporting requirements and whether soil excavated from this area may be managed as exempt soil.

Several PAH constituents were detected in the shallow soil fill sample collected at 2 to 3.5 feet bgs from RF-B-6 at concentrations that are consistent with typical roadway fill materials due to the usage of asphalt and roadway tars and the general construction procedures associated with grading and roadway construction. One PAH constituent, benzo(a)pyrene, was detected at a concentration of 140 micrograms per kilogram (µg/kg) which exceeds the non-industrial direct contact RCL of 115.0 µg/kg. PAHs were not detected in the soil samples collected from RF-B-6A or in the deeper (4 to 5 feet bgs) sample collected from RF-B-6. No VOCs were detected in either of the soil samples collected.

Soil analytical results from samples collected during the April 2018 additional site investigation revealed several low level PAH detections of analyzed parameters in each of the samples collected from the site during this mobilization. As with the September 2017 site investigation, these constituents were present at concentrations that are consistent with typical roadway fill materials due to the usage of asphalt and roadway tars and the general construction procedures associated with grading and roadway construction. In the shallow samples collected from PP-B-1 and PP-B-2 (2 to 3 feet bgs), several PAH constituents were present at levels exceeding WAC NR 720 Non-industrial and Groundwater Pathway RCLs. None of the deeper samples collected from PP-B-1 and PP-B-2 (4 to 5 feet bgs), or

either sample collected from PP-B-3 (2 to 3 feet bgs and 4 to 5 feet bgs) had any PAH constituents present at levels exceeding WAC NR 720 RCLs. Soil exceedances are shown on **Figure 2**.

SECTION 7 Conclusions

The results of the analytical testing indicate that PAHs are present between 0 to 5 feet bgs in soil samples collected from RF-B-6, PP-B-1, PP-B-2, and PP-B-3. Additionally, PAH concentrations of several constituents exceeded WAC NR 720 RCLs in soil samples collected from between 2 to 3.5 feet bgs in soil borings RF-B-6, PP-B-1, and PP-B-2. It is likely that the presence of these PAHs is due to area-wide anthropogenic sources or roadway fill material and not the result of a direct release of contaminants related to the site. Low levels of naturally-occurring metals were detected at concentrations below their respective BTVs. Selenium concentrations, for which there is no approved BTV, were determined not to be the result of a hazardous substance discharge and are not subject to release reporting requirements and soil excavated from these areas may be managed as exempt soil. Soil samples collected from soil borings RF-B-6 and RF-B-6A were analyzed for VOCs and none were detected.

Based upon this information and data, Ramboll has concluded that the soil fill present in this area contains low-level PAHs consistent with this type of fill material. Based on the detections of PAHs and input from the WDNR on similar sites, the soil should be managed under WAC NR 718. Approximately 325 cubic yards of fill material is assumed to contain these low-level PAH detections and is therefore proposed to be managed under WAC NR 718. The estimated soil volume is based on contamination being contained to the upper 5 feet and a 7 foot wide excavation, extending south from geotechnical soil boring RF-B-6A (clean soil boring) to the southern property boundary of Site 12.51 (approximately 250 feet). Based on the locational criteria identified in WAC NR 718.12, an exemption is required. Information required by the WDNR to request a WAC NR 718.12 exemption is outlined in **Section 8**. To streamline the review process, approval of this Phase II ESA report will also be considered approval of the required WAC NR 718.12 exemption allowing on site reuse of contaminated soil and the related WAC NR 718.12(1)(c)5 location exemption request. Ramboll also did not identify any VOC constituents present in soil samples collected from at or below the presumed groundwater table; therefore, Ramboll also does not propose to conduct groundwater sampling and is not recommending special handling for groundwater if it is encountered during construction along this portion of the pipeline.

SECTION 8 Recommendations for Soil and Groundwater Handling

Based upon the results from the multiple soil samples collected at this area of the site and described in **Section 6**, the upper 5 feet of soil along approximately 250 feet of the proposed pipeline construction area is assumed to contain low-level PAH concentrations and will be replaced into the excavations from which it was removed. This reuse of soil fill will be conducted consistent with all but one of the WAC NR 718 location requirements and Program specific construction specifications. The soil quality information and the soil management details included in this Phase II ESA report are to be considered both a formal request for a WAC NR 718.12 waste exemption and the WAC 718.12(1)(c)5 location exemption. The planned soil management procedures will be implemented during construction following the WDNR's approval of this Phase II ESA report which will also be considered approval of the WAC NR718.12 exemption requirements for this location. Based on the absence of PAH or VOC detections from depths greater than 5 feet, soil excavated from depths greater than 5 feet is assumed to be clean and is proposed for reuse within the pipeline excavation or at another location without restriction, provided that no evidence of a previously unidentified release is observed in these soils during construction. Because VOCs were not detected in the soil samples collected from the right-of-way (at or below the presumed groundwater table), no special handling of any groundwater or run-in water which enters the excavation is proposed other than that required under the construction dewatering operations general permit.

8.1 General Proposed Construction Methods

The proposed excavation for the Return Flow Pipeline in this area is estimated to be 7 feet wide and 13 feet deep. Since the PAH detections were limited to the observed depth of the fill, the material requiring handling in accordance with WAC NR 718 is estimated at 4 to 6.5 feet in depth and will be visually determined in the field by an Environmental Professional (EP). Based on these dimensions, the average depth of fill material and the impacted area being bounded to the north by geotechnical soil boring RF-B-6A, approximately 340 cubic yards of soil is estimated to contain these low-level PAH detections and is therefore proposed to be managed in accordance with WAC NR718. As discussed above, low-level impacted soil from the upper 4 to 6.5 feet of the soil column that has the physical characteristics of fill material will be replaced into the excavations from which it was removed consistent with construction specifications and WAC NR 718 as described further below.

In the event that excess confirmed contaminated soil from the upper 4 to 6.5 feet of the soil column is generated that cannot be re-used in the Program excavation from which it was removed, this material will be further characterized if necessary and then transported to a disposal facility. Contaminated soils which cannot be replaced into excavations and are proposed for off-site disposal at a licensed landfill facility will be profiled for waste characterization prior to or during construction, based on the requirements of the receiving landfill and will be transported by a licensed waste hauler in accordance with applicable Wisconsin Department of Transportation (WDOT) requirements.

8.2 Temporary Stockpiles

During construction activities, temporary non-containerized soil stockpiles will be maintained in accordance with WAC NR 718.05(3). Temporary soil stockpiles will not exceed 2,500 cubic yards of excavated soils and temporary soil staging will not exceed 15 days. Temporary soil stockpiles will meet the following requirements for exemption from regulation under WAC Chs. NR 500 to 538:

1. The entire soil pile is anticipated to be located adjacent to the excavation, and thus, in accordance with WAC NR 718.05(3) shall be located within 500 feet of the excavation from which the soil was removed, or within

1,000 feet of the excavation from which it was removed if the soil is stored on the same property from which it was generated.

2. The same soil shall not be stored for more than 15 days.
3. All soil shall be placed on base material impervious to contaminants, such as concrete, asphalt, plastic sheeting or impervious construction fabrics.
4. Surface water contact with soil shall be prevented, including the construction of berms if necessary, to control surface water movement.
5. The contaminated soil shall be covered daily when it is not being moved, with a cover material sufficient to prevent infiltration of precipitation and to inhibit volatilization of soil contaminants.

8.3 Locational Criteria for On-Site Management of Soil

Replacement of soils removed from the upper 4 to 6.5 feet of the soil column within the excavations from which they were removed will be conducted in accordance with the locational criteria specified in WAC NR 718.12(1) and listed below, except where specifically noted.

1. Soils will not be placed within a floodplain.
2. Soils will not be placed within 100 feet of any wetland or critical habitat area.
3. Soils will not be placed within 300 feet of any navigable river, stream, lake, pond, or flowage.
4. Soils will not be placed within 100 feet of any on-site water supply well or 300 feet of any off-site water supply well.
5. Soils are proposed for replacement up to an approximate depth of 6.5 feet below ground surface which is less than 3 feet of the high groundwater level and thus requires an exemption from WAC NR 718.12 (1)(c)(5). The exemption request approval is based upon the following:
 - i. Only two of the ten soil samples had concentrations of PAH constituents that exceeded groundwater pathway RCLs. Only three PAH parameters exceeded groundwater pathway RCLs in these two soil samples.
 - ii. Soils are generally a mix of clay and silts with some sand that typically have low permeability and high sorptive capacity for PAHs.
 - iii. The area is served by the local municipal water system.
 - iv. Replacement of the soil will not create a threat to public health, safety or welfare or the environment, as there is no material change to how/where the soil currently exists.
 - v. Reusing the low-level impacted soil in the excavation from which it came is the most sustainable and cost-effective approach to management of these materials.
6. Soil will not be placed at a depth greater than the depth of the excavation from which the soil was removed.
7. Soils will not be placed where the soil poses a threat to public health, safety, or welfare or the environment.

Therefore, this WAC NR 718 contaminated soil management request will be protective of human health and the environment and will meet six of the seven locational requirements. Placement closer to the high groundwater elevation will remain protective due to the low concentrations of PAHs present in the soil samples and the lack of any complete exposure pathways that could cause excess risk. **Figure 3** has been annotated to identify the pipeline

location where the slightly impacted soils from Site 12.51 will be placed within the top approximately 4 to 6.5 feet of the excavation.

8.4 Soil Characterization

A total of ten soil samples have been collected along the proposed pipeline adjacent to the site identified as Site 12.51 located 1011 Sentry Drive, Waukesha, Wisconsin. Eight of these samples were collected from the shallow fill soil, 5 feet bgs or less. Samples were analyzed for contaminant types that could have been associated with the previous BRRTS incident that occurred at Site 12.51. Analyses for soil samples included VOCs using USEPA Method 8260B, RCRA metals using USEPA Method 6010C, and PAHs using USEPA Method 8270C. All sampling was conducted within the right-of-way, across the street, but adjacent to Site 12.51. Since the project is focused on evaluating the potential for contamination to be encountered during construction, the sample locations were limited to the area of the proposed alignment. Based on the depth of roadway fill materials and anticipated construction methodology, approximately 325 cubic yards of soil fill material are planned to be managed under WAC NR 718. Per WAC NR 718.12(1)(e), for soil volumes exceeding 600 cubic yards, one sample per 300 cubic yards should be collected for analysis. For this site, five soil samples would be required. Since a total of eight soil samples were collected from the shall fill soils, the degree of characterization required under WAC NR 718.12(1)(e) was met.

8.5 Continuing Obligations

Because there were exceedances of WAC NR 720 RCLs within the pipeline alignment, a direct contact barrier similar to that already present on site will be placed at the conclusion of construction activities in this area. In this area, a 6-inch topsoil layer and sod will be used as a direct contact barrier. This is sufficient as only non-industrial direct contact exceedances were limited to four parameters or less in three samples. No industrial direct contact RCLs were exceeded in this industrially-zoned area. An infiltration barrier is not appropriate since there are no groundwater pathway RCLs in the deeper soil samples (those collected from 4 to 5 feet bgs and below) and thus no complete pathway to groundwater. This ground surface is maintained by the City on a regular basis. No other continuing obligations apply.



Tables



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Table 1 - Soil Analytical Data

12.51: RTE Power Products Core and Coil MFG

1011 Sentry Drive; Waukesha, WI

Parameters	Soil RCLs				RF-B-6 (2-3.5' Fill)	RF-B-6 (12-13.5')	RF-B-6A (2-3.5' Fill)	RF-B-6A (9.5-11')	Trip Blank
				Soil Type	Sandy Clay	Silt	Sandy Clay	Silt	--
				PID (ppm)	0.0	0.0	0.0	0.0	--
	Non-Industrial Direct Contact	Industrial Direct Contact	Groundwater Pathway	BTV	9/6/2017	9/6/2017	9/6/2017	9/6/2017	9/6/2017
VOCs (µg/kg) - None Detected									
PAHs (µg/kg)									
Acenaphthene	3,590,000	45,200,000	--	--	<3.1	<3.4	<3.0	<3.5	#N/A
Acenaphthylene	--	--	--	--	<3.9	<4.2	<3.8	<4.4	#N/A
Anthracene	17,900,000	100,000,000	196,949.2	--	<1.6	<1.7	<1.6	<1.8	#N/A
Benzo(a)anthracene	1,140	20,800	--	--	85	<2.9	<2.6	<3.1	#N/A
Benzo(a)pyrene	115.0	2,110	470	--	140 A	<1.2	<1.1	<1.2	#N/A
Benzo(b)fluoranthene	1,150	21,100	479.3	--	190	<1.8	<1.6	<1.9	#N/A
Benzo(ghi)perylene	--	--	--	--	250	<3.2	<2.9	<3.3	#N/A
Benzo(k)fluoranthene	11,500	211,000	--	--	110	<2.5	<2.2	<2.6	#N/A
Chrysene	115,000	2,110,000	144.6	--	94	<1.8	<1.6	<1.9	#N/A
Dibenzo(a,h)anthracene	115.0	2,110	--	--	73	<1.5	<1.4	<1.6	#N/A
Fluoranthene	2,390,000	30,100,000	88,877.8	--	92	<1.4	<1.2	<1.4	#N/A
Fluorene	2,390,000	30,100,000	14,830	--	<1.4	<1.5	<1.4	<1.6	#N/A
Indeno(1,2,3-cd)pyrene	1,150	21,100	--	--	170	<1.5	<1.3	<1.5	#N/A
2-Methylnaphthalene	239000	3010000	--	--	<7.1	<7.7	<7.0	<8.1	#N/A
Naphthalene	5520	24100	658.2	--	<8.2	<8.9	<8.1	<9.4	#N/A
Phenanthrene	--	--	--	--	<1.5	<1.6	<1.5	<1.7	#N/A
Pyrene	1,790,000	22,600,000	54,545.5	--	110	<1.7	<1.6	<1.8	#N/A
Metals (mg/kg)									
Arsenic ³	0.677	3.00	0.58	8.3	2.9	2.0	2.3	4.2	#N/A
Barium ³	15,300	100,000	164.8	364	39	9.6	16	39	#N/A
Cadmium ³	71	985	0.75	1.07	0.13	0.11	0.10	0.040	#N/A
Chromium	--	--	360,000	43.5	12	4.8	4.2	13	#N/A
Lead ³	400	800	27	51.6	12 MB	3.8 MB	5.2 MB	8.8	#N/A
Mercury	3.13	3.13	0.21	--	0.015	<0.0030	0.0051 J	0.018	#N/A
Selenium	391	5,840	0.52	--	0.57 J C	0.56 J C	0.51 J	1.0 C	#N/A
Silver	391	5,840	0.85	--	0.027 J	0.019 J	<0.013	0.016	#N/A

Notes:

VOCs = Volatile Organic Compounds

PAHs = Polynuclear Aromatic Hydrocarbons

RCL = Residual Contaminant Level

BTV = Background Threshold Value

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

A Parameter exceeds NR 720 Residual Contaminant Level (RCL) for Non-Industrial Direct Contact.

B Parameter exceeds NR 720 RCL for Industrial Direct Contact.

C Parameter exceeds NR 720 RCL for Groundwater Pathway.

J Parameter is present at an estimated concentration between the Method Detection Limit and Reporting Limit.

MB = Parameter detected in the associated Method Blank above the Reporting Limit.

#N/A = Not analyzed

-- No RCL or Surficial BTV established.

PID = Photoionization Detector

ppm = parts per million

Detections of metals above the NR720 RCLs are only considered exceedances if they are also above the BTV.

Table 1 - Soil Analytical Data

12.51: RTE Power Products Core and Coil MFG
1011 Sentry Drive; Waukesha, WI

Parameters	Soil RCLs				PP-B-1 (2-3')	PP-B-1 (4-5')	PP-B-2 (2-3')	PP-B-2 (4-5')	PP-B-3 (2-3')	PP-B-3 (4-5')
				Soil Type	Clayey Silt	Sand (F III)	Silt (F III)	Sand & Gravel (Poss. Fill)	Silt (F III)	Sandy Clay (F III)
				PID (ppm)	2.3	1.9	1.5	1.0	2.2	1.6
	Non-Industrial Direct Contact	Industrial Direct Contact	Groundwater Pathway	BTV	4/19/2018	4/19/2018	4/19/2018	4/19/2018	4/19/2018	4/19/2018
VOCs (µg/kg) - None Detected										
PAHs (µg/kg)										
Acenaphthene	3,590,000	45,200,000	--	--	41.3 J	<4.3	6.0 J	<4.3	<4.6	<4.9
Acenaphthylene	--	--	--	--	939	7.9 J	396	<3.6	29.6	<4.2
Anthracene	17,900,000	100,000,000	196,949.2	--	898	<6.4	297	<6.3	33.3	<7.2
Benzo(a)anthracene	1,140	20,800	--	--	1,530 A	23.9	608	<3.5	71.7	<4.0
Benzo(a)pyrene	115.0	2,110	470	--	2,080 A,C	23.1	727 A,C	4.0 J	68.5	4.4 J
Benzo(b)fluoranthene	1,150	21,100	479.3	--	1,620 A,C	25.8	995 C	5.0 J	115	6.0 J
Benzo(ghi)perylene	--	--	--	--	898	13.9	386	3.0 J	36.8	3.1 J
Benzo(k)fluoranthene	11,500	211,000	--	--	1,980	27.6	287	<2.8	47.4	<3.2
Chrysene	115,000	2,110,000	144.6	--	1,940 C	42.1	605 C	<3.7	84.4	<4.3
Dibenzo(a,h)anthracene	115.0	2,110	--	--	476 A	5.2 J	94.2	<2.5	10.3	<2.8
Fluoranthene	2,390,000	30,100,000	88,877.8	--	2,280	48.6	367	<5.7	87.7	<6.6
Fluorene	2,390,000	30,100,000	14,830	--	125 J	<4.6	17.4	<4.6	<4.9	<5.2
Indeno(1,2,3-cd)pyrene	1,150	21,100	--	--	967	13.4	258	2.7 J	27.9	2.9 J
2-Methylnaphthalene	239000	3010000	--	--	57.9 J	<5.6	<6.2	<5.5	<5.9	<6.3
Naphthalene	5520	24100	658.2	--	160 J	<9.4	<10.4	<9.3	<10.0	<10.6
Phenanthrene	--	--	--	--	850	18.6 J	120	<12.9	70.3	<14.7
Pyrene	1,790,000	22,600,000	54,545.5	--	2,470	36.6	536	<5.0	106	<5.7
Metals (mg/kg)										
Arsenic ³	0.677	3.00	0.58	8.3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Barium ³	15,300	100,000	164.8	364	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Cadmium ³	71	985	0.75	1.07	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Chromium	--	--	360,000	43.5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Lead ³	400	800	27	51.6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Mercury	3.13	3.13	0.21	--	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Selenium	391	5,840	0.52	--	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Silver	391	5,840	0.85	--	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Notes:

VOCs = Volatile Organic Compounds

PAHs = Polynuclear Aromatic Hydrocarbons

RCL = Residual Contaminant Level

BTV = Background Threshold Value

µg/kg = micrograms per kilogram

mg/kg = milligrams per kilogram

A Parameter exceeds NR 720 Residual Contaminant Level (RCL) for Non-Industrial Direct Contact.

B Parameter exceeds NR 720 RCL for Industrial Direct Contact.

C Parameter exceeds NR 720 RCL for Groundwater Pathway.

J Parameter is present at an estimated concentration between the Method Detection Limit and Reporting

MB = Parameter detected in the associated Method Blank above the Reporting Limit.

#N/A = Not analyzed

-- No RCL or Surficial BTV established.

PID = Photoionization Detector

ppm = parts per million

Detections of metals above the NR720 RCLs are only considered exceedances if they are also above the



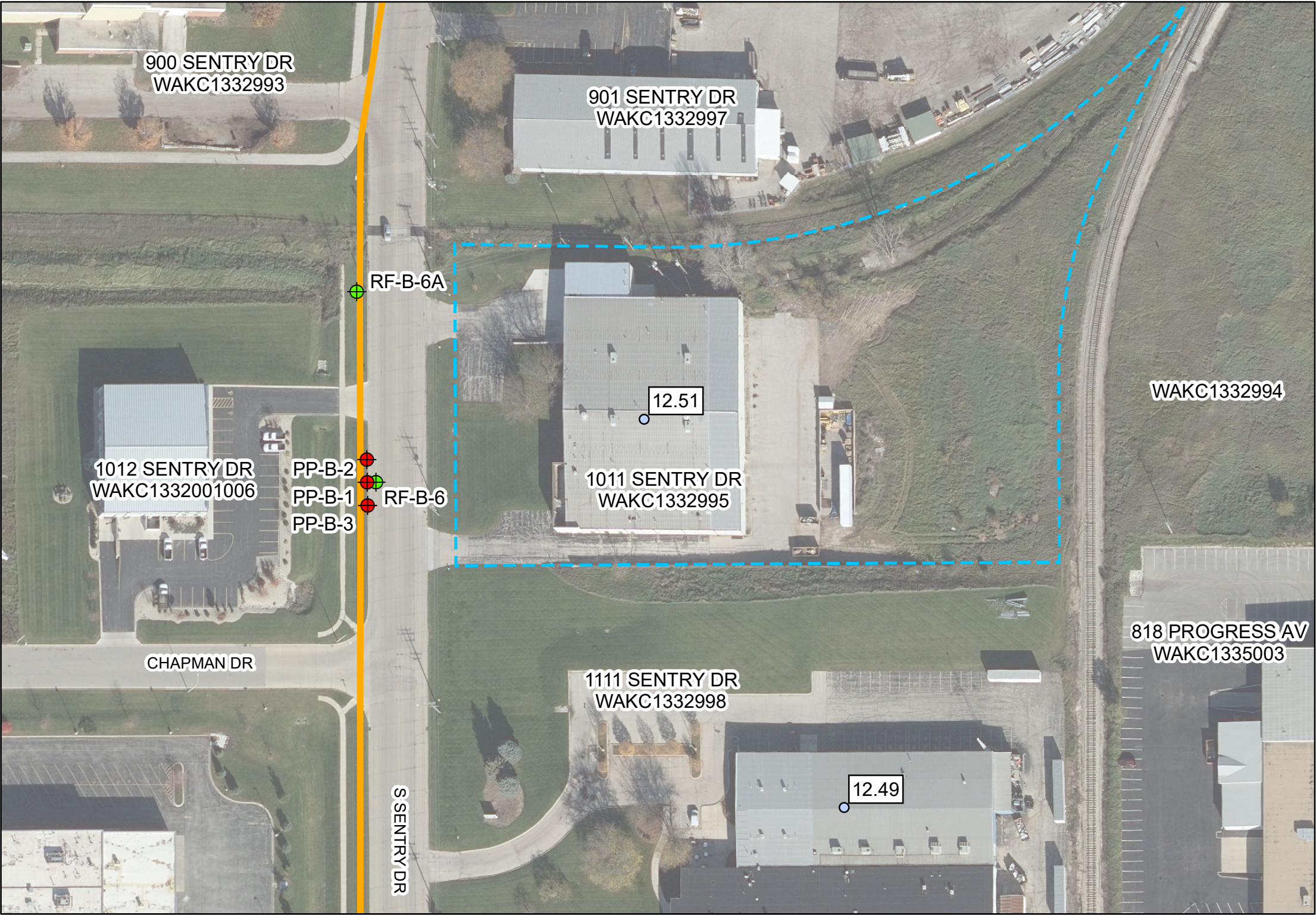
Figures



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Aerials provided by Greeley and Hansen on January 26, 2018.
Milwaukee aerials were last updated December 14, 2017.
Waukesha aerials were last updated November 15, 2016.

FIGURE NO. 1



Legend

- Ramboll Boring Location
- Geotechnical Boring Location
- Listed Environmental Site
- BRRTS Boundary
- Parcel Boundary
- Return Flow Pipeline Route Alternative 3

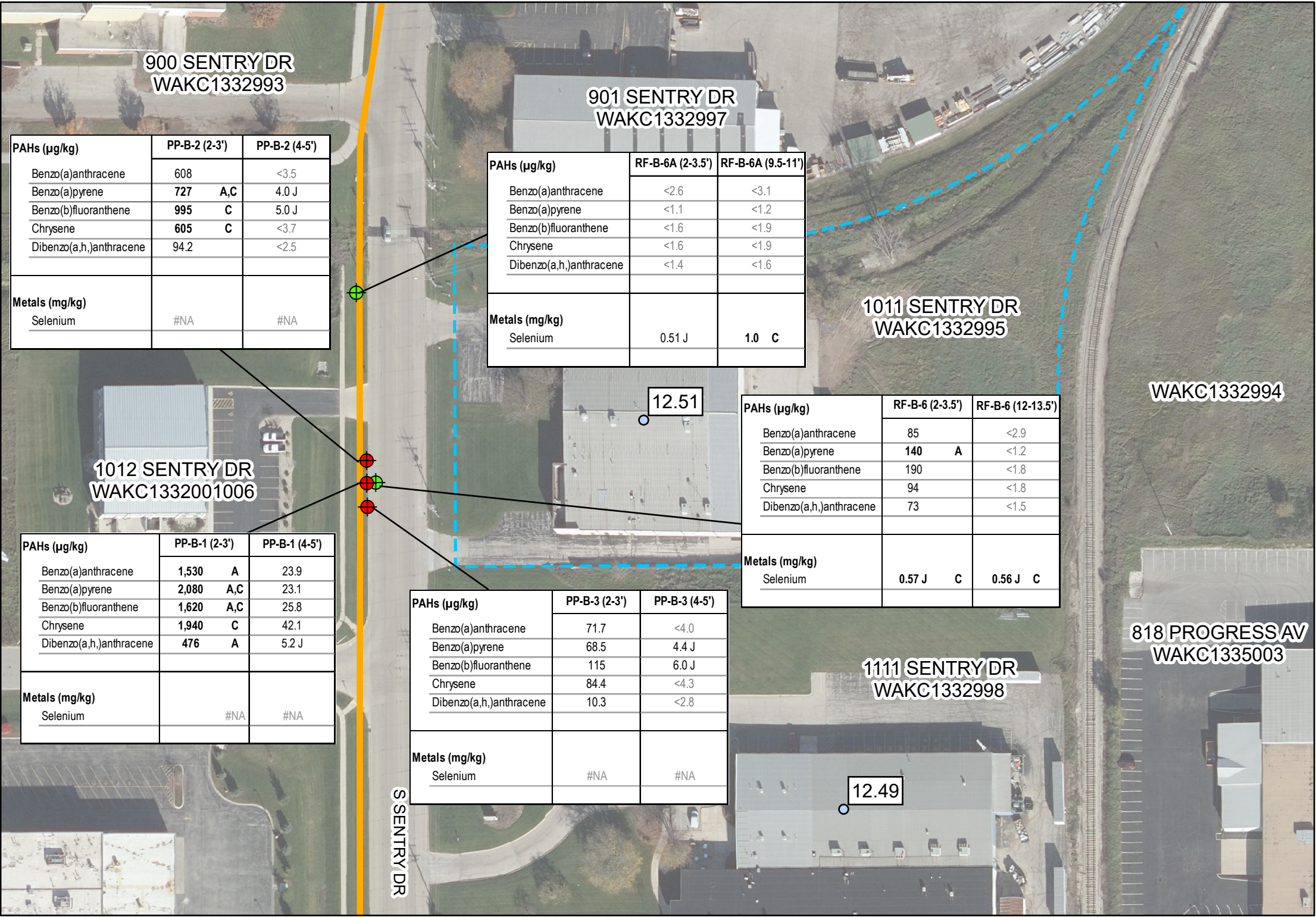
Note: Field screening and environmental samples collected at RF-B-6 and RF-B-6A.

Parcel and address information acquired from Waukesha County.

Plotted: 1/14/2019
Document Path: M:\Client Project Files\21-41365B Waukesha Water Utility-Phase II\Task 4-Route Study\GISMXD\Phase II Figures\Site 12.51\Draft_12.51_Sample Locations.mxd

Aerials provided by Greeley and Hansen on January 26, 2018.
Milwaukee aerials were last updated December 14, 2017.
Waukesha aerials were last updated November 15, 2016.

FIGURE NO. 2



Legend

- Ramboll Boring Location
- Geotechnical Boring Location
- Listed Environmental Site
- BRRTS Boundary
- Parcel Boundary
- Return Flow Pipeline Route Alternative 3

Note: Field screening and environmental samples collected at RF-B-6 and RF-B-6A.

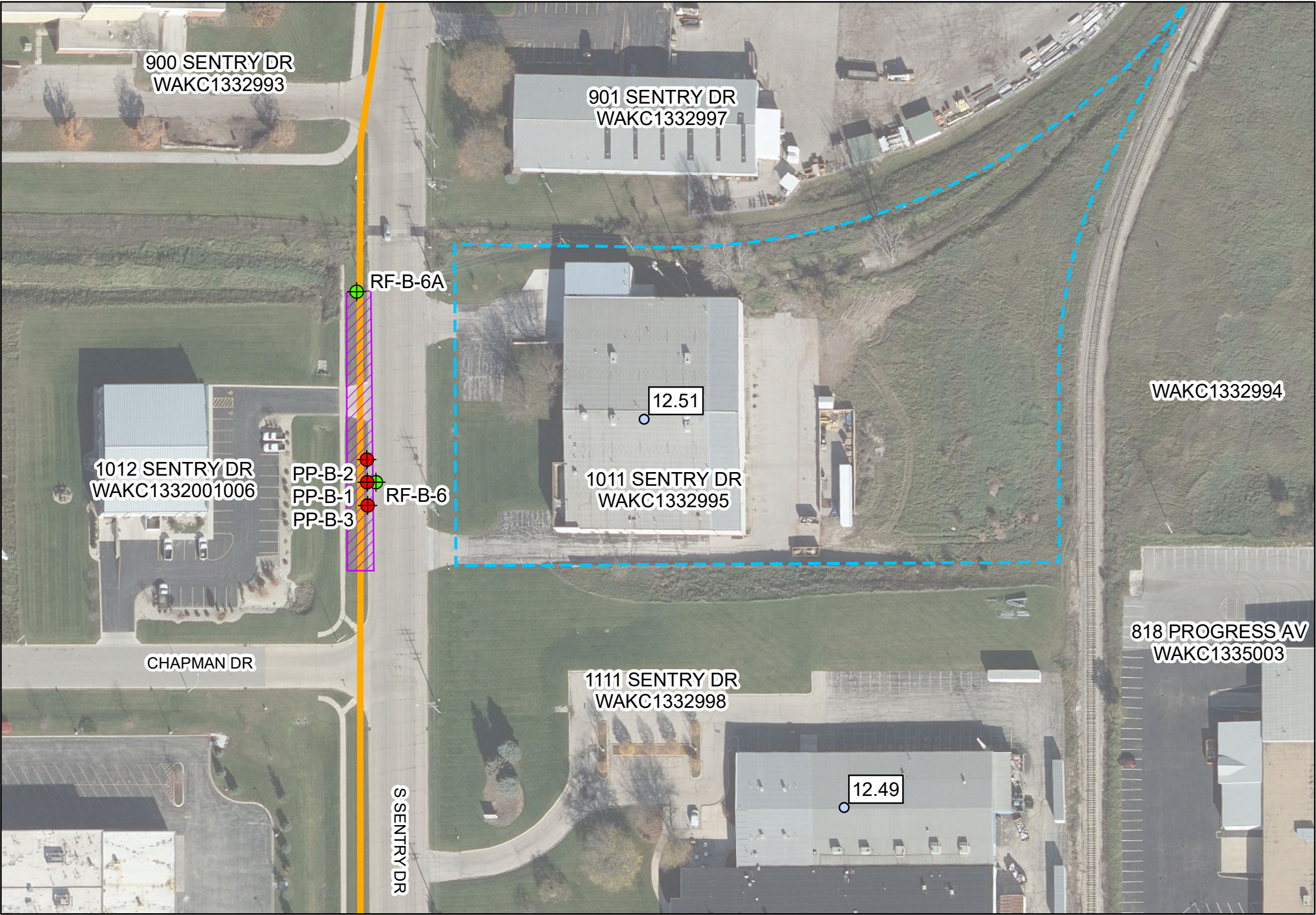
Parameters	Soil RCLs			
	Non-Industrial Direct Contact	Industrial Direct Contact	Groundwater Pathway	BTv
PAHs (µg/kg)				
Benzo(a)anthracene	1,140	20,800	--	--
Benzo(a)pyrene	115.0	2,110	470	--
Benzo(b)fluoranthene	1,150	21,100	479.3	--
Chrysene	115,000	2,110,000	144.6	--
Dibenzo(a,h.)anthracene	115.0	2,110	--	--
Metals (mg/kg)				
Selenium	391	5,840	0.52	--

Notes:
PAHs = Polynuclear Aromatic Hydrocarbons
RCL = Residual Contaminant Level
BTv = Background Threshold Value
µg/kg = micrograms per kilogram
mg/kg = milligrams per kilogram
A Parameter exceeds NR 720 Residual Contaminant Level (RCL) for Non-Industrial Direct Contact.
B Parameter exceeds NR 720 RCL for Industrial Direct Contact.
C Parameter exceeds NR 720 RCL for Groundwater Pathway.
J Parameter is present at an estimated concentration between the Method Detection Limit and Reporting Limit.
MB = Parameter detected in the associated Method Blank above the Reporting Limit.
-- No RCL or Surfactant BTv established.
1 Parameter BTv is larger than one or more of the RCLs or is the only standard available.
Detections of metals above the NR720 RCLs are only considered exceedances if they are also above the BTv.
#NA Not Analyzed

Parcel and address information acquired from Waukesha County.

FIGURE NO. 3

Aerials provided by Greeley and Hansen on January 26, 2018.
Milwaukee aerials were last updated December 14, 2017.
Waukesha aerials were last updated November 15, 2016.



Legend

- Ramboll Boring Location
- Geotechnical Boring Location
- Listed Environmental Site
- BRRTS Boundary
- Parcel Boundary
- Special Handling Area
- Return Flow Pipeline Route Alternative 3

Note: Field screening and environmental samples collected at RF-B-6 and RF-B-6A.



Parcel and address information acquired from Waukesha County.

Plotted: 1/14/2019
Document Path: M:\Client Project Files\21-41365B Waukesha Water Utility-Phase II\Task 4-Route Study\GISMXD\Phase II Figures\Site 12.51\DRIFT_12.51_Special Handling Area.mxd

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Appendix A – Soil Boring Logs and Abandonment Forms





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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.51			License/Permit/Monitoring Number N/A		Boring Number PP-B-1	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental			Date Drilling Started 4/19/2018		Date Drilling Completed 4/19/2018	
Drilling Method Geoprobe						
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches	
Local Grid Origin <input checked="" type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/> State Plane N, E S/C/N 1/4 of T 1/4 of Section N, R			Lat ° ' " Long ° ' "		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID		County	County Code	Civil Town/City/ or Village		

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 36		1.5	<u>TOPSOIL</u> <u>FILL</u> Clayey silt with gravel, dark brown.	Fill			2.3						
			3.0	<u>FILL</u> Sand, dark tan.	Fill									
			4.5											
				End of boring at 5 ft.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.





Signature <i>Tyler Buehler</i>	Firm Ramboll 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.51		License/Permit/Monitoring Number N/A		Boring Number PP-B-2	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 4/19/2018		Date Drilling Completed 4/19/2018	
WI Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level Feet MSL		Surface Elevation Feet MSL		Borehole Diameter 2.0 inches	
Local Grid Origin <input checked="" type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/> State Plane N, E S/C/N		Lat ° ' " Long ° ' "		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
1/4 of T		1/4 of Section N, R			
Facility ID		County		County Code	
				Civil Town/City/ or Village	

Sample			Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)	Compressive Strength								Moisture Content	Liquid Limit	Plasticity Index	P 200		
1 CS	60 36				<u>TOPSOIL</u> <u>FILL</u> Silt, dark brown.	Fill									
					<u>FILL</u> Sand, dark tan.	Fill			1.5						
					<u>FILL</u> Silty clay, brown.	Fill			1.0						
					<u>SAND AND GRAVEL</u> Possibly fill, tan.	SP									
					End of boring at 5ft.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>Tyler Buehler</i>	Firm Ramboll 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.51			License/Permit/Monitoring Number N/A		Boring Number PP-B-3	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental			Date Drilling Started 4/19/2018		Date Drilling Completed 4/19/2018	
Drilling Method Geoprobe						
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches	
Local Grid Origin <input checked="" type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/> State Plane N, E S/C/N 1/4 of T 1/4 of Section N, R			Lat ° ' " Long ° ' "		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	










Facility ID	County	County Code	Civil Town/City/ or Village
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Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 60		1.5	<u>TOPSOIL</u> <u>FILL</u> Silt with gravel, dark brown.	Fill									
			3.0	<u>FILL</u> Sand, dark tan.	Fill			2.2						
			4.5	<u>FILL</u> Sandy clay, dark brown.	Fill			1.6						

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>Tyler Buehler</i>	Firm Ramboll 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-6									
PROJECT ID No						PAGE No		1 of 1									
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No		DATE STARTED 9/06/17		HORIZONTAL DATUM		VERTICAL DATUM									
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10		DATE COMPLETED 9/06/17		LATITUDE											
CREW CHIEF M. Rhodes		DRILLING RIG CME 45		WisDOT STRUCTURE ID No		LONGITUDE											
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Sentry Dr.		NORTHING 366794											
LOG QC BY J. Bruesewitz		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		OFFSET									
COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION		1/4 SECTION									
								SURFACE ELEVATION 807.9 ft									
Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _p or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes			
1 SS	16	4 5 5	10	<div><div>805</div><div>5</div><div>800</div><div>10</div><div>795</div><div>15</div></div>	CONCRETE (6") 0.5 (807.4)				1.00								
2 SS	18	5 6 7	13		BASE COURSE (5") 0.9 (807)									SAND WITH SILT, brown, moist, medium dense, some clay seams			
3 SS	18	5 5 5	10		LEAN CLAY WITH SAND, brown to grayish brown, moist, stiff, trace gravel												
4 SS	18	2 2 2	4												CLAYEY SAND, light brown, wet, very loose, trace gravel		
5 SS	12	2 1 1	2													SILT, gray, wet, medium dense	
6 SS	18	5 5 6	11														11.3 (796.6)
7 SS	18	5 6 7	13														
End of Boring at 16.0 ft.																	
WATER & CAVE-IN OBSERVATION DATA																	
	WATER ENCOUNTERED DURING DRILLING: 10.4ft.					CAVE DEPTH AT COMPLETION: 5.4ft.				WET <input type="checkbox"/> DRY <input type="checkbox"/>							
	WATER LEVEL AT COMPLETION: NE					CAVE DEPTH AFTER 0 HOURS: NMR				WET <input type="checkbox"/> DRY <input type="checkbox"/>							
	WATER LEVEL AFTER 0 HOURS: NMR				NE = Not Encountered; NMR = No Measurement Recorded												
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.																	

PROJECT NAME Great Water Alliance		 BORING LOG 		BORING No RF-B-6A PAGE No 1 of 1	
PROJECT ID No		CONSULTANT PROJECT No		DATE STARTED 9/06/17	
CONSULTANT Greeley & Hansen		DATE COMPLETED 9/06/17		HORIZONTAL DATUM	
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10		VERTICAL DATUM	
CREW CHIEF M. Rhodes		DRILLING RIG CME 45		LATITUDE	
FIELD LOG BY L. Rykoskey		WiSDOT STRUCTURE ID No		LONGITUDE	
LOG QC BY J. Bruesewitz		DRILLING METHOD / HOLE SIZE 3 3/4 HSA		ROADWAY NAME Sentry Dr.	
COUNTY 67-Waukesha		HAMMER TYPE Auto		NORTHING 366984	
		EFFICIENCY 96%		EASTING 2468245	
		STATION		SURFACE ELEVATION 806.6 ft	
		OFFSET			
		TOWNSHIP			
		RANGE			
		SECTION			
		1/4 SECTION			
		1/4 SECTION			

[illegible]

WATER & CAVE-IN OBSERVATION DATA

WATER & GASE IN OBSERVATION DATA						
	WATER ENCOUNTERED DURING DRILLING:	8.3ft.		CAVE DEPTH AT COMPLETION:	7.6ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION:	NE		CAVE DEPTH AFTER 0 HOURS:	NMR	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS:	NMR		NE = Not Encountered; NMR = No Measurement Recorded		WET <input type="checkbox"/>

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PID Readings and Laboratory Sample Information

Site ID **12.51**

Contractor **GESTRA**

Boring **RF-B-6A**

Sample Interval	PID	Laboratory Sample
0-2'	0.0	--
2-3.5'	0.0	2-3.5' (VOCs, PAHs, RCRA Metals)
4.5-6'	0.0	--
7-8.5'	0.0	--
9.5-11'	0.0	9.5-11' (VOCs, PAHs, RCRA Metals)
12-13.5'	0.0	--
14.5-16'	0.0	--

Boring **RF-B-6**

Sample Interval	PID	Laboratory Sample
0-2'	0.0	--
2-3.5'	0.0	2-3.5' (VOCs, PAHs, RCRA Metals)
4.5-6'	0.0	--
7-8.5'	0.0	--
9.5-11'	0.0	--
12-13.5'	0.0	12-13.5' (VOCs, PAHs, RCRA Metals)
14.5-16'	0.0	--

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ Verification Only of Fill and Seal

Route to DNR Bureau:

☐ Drinking Water

☐ Watershed/Wastewater

☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

1. Well Location Information

County Waukesha WI Unique Well # of Removed Well _____ Hicap # _____

Latitude / Longitude (see instructions) _____ N ☐ DD ☐ GPS008
_____ W ☐ DDM ☐ SCR002
_____ ☐ OTH001

1/4 1/4 Section Township Range ☐ E
or Gov't Lot # _____ N ☐ W

Well Street Address 1011 Semy Drive

Well City, Village or Town Waukesha Well ZIP Code _____

Subdivision Name _____ Lot # _____

Reason for Removal from Service soil boring WI Unique Well # of Replacement Well _____

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well ☐ Water Well ☒ Borehole / Drillhole
Original Construction Date (mm/dd/yyyy) 04/19/2018
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Geo Probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.) _____ Casing Diameter (in.) _____

Lower Drillhole Diameter (in.) _____ Casing Depth (ft.) _____

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown

If yes, to what depth (feet)? _____ Depth to Water (feet) _____

5. Material Used to Fill Well / Drillhole

Topsoil
Bentonite

6. Comments

PP-3-1

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing Tony Kapugi License # _____ Date of Filling & Sealing or Verification (mm/dd/yyyy) 04/19/2018
Street or Route P.O. Box 260 Telephone Number (608) 837-8992

City Sun Prairie State WI ZIP Code 53590

2. Facility / Owner Information

Facility Name Waukesha Water Utility

Facility ID (FID or PWS) _____

License/Permit/Monitoring # _____

Original Well Owner _____

Present Well Owner _____

Mailing Address of Present Owner _____

City of Present Owner _____ State _____ ZIP Code _____

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed? ☐ Yes ☐ No ☒ N/A

Liner(s) removed? ☐ Yes ☐ No ☒ N/A

Liner(s) perforated? ☐ Yes ☐ No ☒ N/A

Screen removed? ☐ Yes ☐ No ☒ N/A

Casing left in place? ☐ Yes ☐ No ☒ N/A

Was casing cut off below surface? ☐ Yes ☐ No ☒ N/A

Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A

Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A

If yes, was hole retopped? ☐ Yes ☐ No ☒ N/A

If bentonite chips were used, were they hydrated with water from a known safe source? ☒ Yes ☐ No ☐ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped

☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neal Cement Grout ☐ Concrete

☐ Sand-Cement (Concrete) Grout ☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout

☐ Granular Bentonite ☐ Bentonite - Sand Slurry

Grout #	Grout Type	Grout Depth (ft.)	Grout Volume (cu yd)	Mix Ratio or Other Notes
Surface	0.5			
0.5	5			

Signature of Person Doing Work Anthony R. Kapugi Date Signed 07/11/2018

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ Verification Only of Fill and Seal

Route to DNR Bureau:

☐ Drinking Water

☐ Watershed/Wastewater

☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

1. Well Location Information

County Waukesha WI Unique Well # of Removed Well _____ Hicap # _____

Latitude / Longitude (see instructions) _____ N ☐ DD ☐ GPS008
W ☐ DDM ☐ SCR002
Method Code ☐ OTH001

1/4 1/4 _____ Section _____ Township _____ Range ☐ E ☐ W
or Gov't Lot # _____

Well Street Address 1011 Sentry Drive

Well City, Village or Town Waukesha Well ZIP Code _____

Subdivision Name _____ Lot # _____

Reason for Removal from Service soil boring WI Unique Well # of Replacement Well _____

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well Original Construction Date (mm/dd/yyyy) 04/19/2018
☐ Water Well
☒ Borehole / Drillhole If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Geo Probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.) _____ Casing Diameter (in.) _____

Lower Drillhole Diameter (in.) _____ Casing Depth (ft.) _____

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown

If yes, to what depth (feet)? _____ Depth to Water (feet) _____

5. Material Used to Fill Well / Drillhole

Topsoil Surface 0.5
Bentonite 0.5 5

6. Comments

PP-B-2

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing Tony Kapugi License # _____ Date of Filling & Sealing or Verification (mm/dd/yyyy) 04/19/2018

Street or Route P.O. Box 260 Telephone Number (608) 837-8992

City Shun Prairie State WI ZIP Code 53590

2. Facility / Owner Information

Facility Name Waukesha Water Utility

Facility ID (FID or PWS) _____

License/Permit/Monitoring # _____

Original Well Owner _____

Present Well Owner _____

Mailing Address of Present Owner _____

City of Present Owner _____ State _____ ZIP Code _____

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed? ☐ Yes ☐ No ☒ N/A

Liner(s) removed? ☐ Yes ☐ No ☒ N/A

Liner(s) perforated? ☐ Yes ☐ No ☒ N/A

Screen removed? ☐ Yes ☐ No ☒ N/A

Casing left in place? ☐ Yes ☐ No ☒ N/A

Was casing cut off below surface? ☐ Yes ☐ No ☒ N/A

Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A

Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A

If yes, was hole retopped? ☐ Yes ☐ No ☒ N/A

If bentonite chips were used, were they hydrated with water from a known safe source? ☒ Yes ☐ No ☐ N/A

Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped

☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials

☐ Neat Cement Grout ☐ Concrete

☐ Sand-Cement (Concrete) Grout ☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

☐ Bentonite Chips ☐ Bentonite - Cement Grout

☐ Granular Bentonite ☐ Bentonite - Sand Slurry

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

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☐ Verification Only of Fill and Seal

Route to DNR Bureau:

☐ Drinking Water

☐ Watershed/Wastewater

☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

1. Well Location Information

County Waukesha WI Unique Well # of Removed Well _____ Hicap # _____

Latitude / Longitude (see instructions) _____ N ☐ DD ☐ GPS008
_____ W ☐ DDM ☐ SCR002
_____ ☐ OTH001

1/4 1/4 _____ % Section _____ Township _____ Range ☐ E
or Gov't Lot # _____ ☐ W

Well Street Address 1011 Sentry Drive

Well City, Village or Town Waukesha Well ZIP Code _____

Subdivision Name _____ Lot # _____

Reason for Removal from Service soil boring WI Unique Well # of Replacement Well _____

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole
Original Construction Date (mm/dd/yyyy) 04/19/2018
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Geo Probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.) _____ Casing Diameter (in.) _____

Lower Drillhole Diameter (in.) _____ Casing Depth (ft.) _____

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown

If yes, to what depth (feet)? _____ Depth to Water (feet) _____

5. Material Used to Fill Well / Drillhole

<u>Topsoil</u>	Surface	0.5		
<u>Bentonite</u>	0.5	5		

6. Comments

PA-B-3

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing <u>Tony Kapugi</u>	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) <u>04/19/2018</u>	DNR Use Only	
Street or Route <u>P.O. Box 260</u>	Telephone Number <u>(608) 837-8992</u>	Comments	Date Received	Noted By
City <u>Shun Prairie</u>	State <u>WI</u>	ZIP Code <u>53590</u>	Signature of Person Doing Work <u>Anthony R. Kapugi</u>	
			Date Signed	<u>07/11/2018</u>

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:

☐ Drinking Water

☐ Watershed/Wastewater

☐ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

1. Well Location Information

County <i>Waukesha</i>	WI Unique Well # of Removed Well <i>RF-PD-6A</i>	Hicap #
Latitude / Longitude (see instructions) <i>42° 59' 36.52" N</i> <i>88° 14' 59.74" W</i>	Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM	Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001
1/4 1/4 or Gov't Lot #	Section	Township Range <input type="checkbox"/> E <input type="checkbox"/> W
Well Street Address		

Well City, Village or Town	Well ZIP Code
Subdivision Name	Lot #

Reason for Removal from Service	WI Unique Well # of Replacement Well
---------------------------------	--------------------------------------

3. Filled & Sealed Well / Drillhole / Borehole Information

<input type="checkbox"/> Monitoring Well	Original Construction Date (mm/dd/yyyy) <i>09/06/2017</i>
<input type="checkbox"/> Water Well	If a Well Construction Report is available, please attach.
<input checked="" type="checkbox"/> Borehole / Drillhole	
Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (specify): _____	

Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock	
Total Well Depth From Ground Surface (ft.) <i>21'</i>	Casing Diameter (in.) <i>8"</i>
Lower Drillhole Diameter (in.) <i>8"</i>	Casing Depth (ft.) <i>21'</i>
Was well annular space grouted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown	
If yes, to what depth (feet)?	Depth to Water (feet) <i>14'</i>

5. Material Used to Fill Well / Drillhole

<i>Bentonite Chips</i>

2. Facility / Owner Information

Facility Name <i>GWA</i>		
Facility ID (FID or PWS)		
License/Permit/Monitoring #		
Original Well Owner		
Present Well Owner		
Mailing Address of Present Owner		
City of Present Owner	State	ZIP Code

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Liner(s) removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Liner(s) perforated?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Screen removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Casing left in place?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Was casing cut off below surface?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Did sealing material rise to surface?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Did material settle after 24 hours?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
If yes, was hole retopped?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Required Method of Placing Sealing Material

<input type="checkbox"/> Conductor Pipe-Gravity	<input type="checkbox"/> Conductor Pipe-Pumped
<input checked="" type="checkbox"/> Screened & Poured (Bentonite Chips)	<input type="checkbox"/> Other (Explain): _____

Sealing Materials

<input type="checkbox"/> Neat Cement Grout	<input type="checkbox"/> Concrete
<input type="checkbox"/> Sand-Cement (Concrete) Grout	<input type="checkbox"/> Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

<input checked="" type="checkbox"/> Bentonite Chips	<input type="checkbox"/> Bentonite - Cement Grout
<input type="checkbox"/> Granular Bentonite	<input type="checkbox"/> Bentonite - Sand Slurry

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing <i>Mike Rhodes - Besta</i>	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) <i>09/06/2017</i>	DNR Use Only	
Street or Route <i>191 W. Edgerton Ave</i>	City <i>Milwaukee</i>	State <i>WI</i>	ZIP Code <i>53207</i>	Date Received
Telephone Number <i>(414) 933-7444</i>		Noted By		
Signature of Person Doing Work <i>[Signature]</i>		Comments		
Date Signed <i>1-31</i>				

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:

- ☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

1. Well Location Information

County Waukesha WI Unique Well # of Removed Well RF-B-60 Hicap # _____
Latitude / Longitude (see instructions) 42° 59' 34.66" N 88° 14' 59.32" W Format Code ☐ DD ☐ GPS008 ☐ SCR002 ☐ OTH001
☐ DDM ☐ 1/4 1/4 Section Township Range ☐ E ☐ W
or Gov't Lot # _____
Well Street Address _____

2. Facility / Owner Information

Facility Name GWA
Facility ID (FID or PWS) _____
License/Permit/Monitoring # _____
Original Well Owner _____
Present Well Owner _____
Mailing Address of Present Owner _____
City of Present Owner _____ State _____ ZIP Code _____

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well ☐ Water Well ☒ Borehole / Drillhole
Original Construction Date (mm/dd/yyyy) 09/06/2017
If a Well Construction Report is available, please attach. _____

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug
☐ Other (specify): _____

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.) 16' Casing Diameter (in.) 8"
Lower Drillhole Diameter (in.) 8" Casing Depth (ft.) 16'

Was well annular space grouted? ☐ Yes ☒ No ☐ Unknown
If yes, to what depth (feet)? _____ Depth to Water (feet) _____

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed? ☐ Yes ☐ No ☒ N/A
Liner(s) removed? ☐ Yes ☐ No ☒ N/A
Liner(s) perforated? ☐ Yes ☐ No ☒ N/A
Screen removed? ☐ Yes ☐ No ☒ N/A
Casing left in place? ☐ Yes ☐ No ☒ N/A
Was casing cut off below surface? ☐ Yes ☐ No ☒ N/A
Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A
Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A
If yes, was hole retopped? ☐ Yes ☐ No ☐ N/A
If bentonite chips were used, were they hydrated with water from a known safe source? ☒ Yes ☐ No ☐ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

☒ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Surface	<u>16</u>	<u>8</u>	

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing			License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)	DNR Use Only	
<u>Mike Rhodes - Gestra</u>				<u>09/06/2017</u>	Date Received	Noted By
Street or Route <u>191 W. Edgerton Ave</u>			Telephone Number <u>(414) 933-7444</u>		Comments	
City <u>Milwaukee</u>	State <u>WI</u>	ZIP Code <u>53207</u>	Signature of Person Doing Work <u>[Signature]</u>		Date Signed <u>1-24</u>	

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Appendix B – Laboratory Analytical Results



(NO TEXT FOR THIS PAGE)



25-Sep-2017

Donna Volk
Ramboll Environ US Corporation
175 N Corporate Drive
Suite 160
Brookfield, WI 53045

Re: **21-41365B**

Work Order: **1709440**

Dear Donna,

ALS Environmental received 5 samples on 08-Sep-2017 03:30 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 39.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

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Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

(NO TEXT FOR THIS PAGE)

Client: Ramboll Environ US Corporation
Project: 21-41365B
Work Order: 1709440

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1709440-01	RF-B-6 (2-3.5' Fill)	Soil		9/6/2017 09:25	9/8/2017 15:30	<input type="checkbox"/>
1709440-02	RF-B-6 (12-13.5')	Soil		9/6/2017 09:49	9/8/2017 15:30	<input type="checkbox"/>
1709440-03	RF-B-6A (2-3.5' Fill)	Soil		9/6/2017 12:17	9/8/2017 15:30	<input type="checkbox"/>
1709440-04	RF-B-6A (9.5-11')	Soil		9/6/2017 12:30	9/8/2017 15:30	<input type="checkbox"/>
1709440-05	Trip Blank	Soil		9/6/2017	9/8/2017 15:30	<input type="checkbox"/>

Client: Ramboll Environ US Corporation
Project: 21-41365B
Work Order: 1709440

Case Narrative

Samples for the above noted Work Order were received on 09/08/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, sample condition, preservation, and temperature compliance.

In order to ensure compliance with NR 149 criteria, please note the following report format:

- (1) The Limit of Detection (LOD) is reported as the MDL (Method Detection Limit)
- (2) The Limit of Quantitation (LOQ) is reported as the PQL (Practical Quantitation Limit)
- (3) All reported concentrations, including those for the LOD and LOQ, are adjusted for any required dilutions
- (4) All reported concentrations, including those for the LOD and LOQ, are adjusted for moisture content when samples are reported on a dry weight basis.

Samples were analyzed according to the analytical methodology previously documented in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Detail as to the associated samples can be found at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, acronyms, and units utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals

Batch 107275, Method WI_ICPMS_S, Sample 1709440-01C: The concentration in the Method Blank was greater than the quantitation limit for Lead. The sample result was greater than 10x the concentration in the Method Blank; therefore, no qualification is required.

Client: Ramboll Environ US Corporation
Project: 21-41365B
WorkOrder: 1709440

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
% of sample	Percent of Sample
µg/Kg-dry	Micrograms per Kilogram Dry Weight
mg/Kg-dry	Milligrams per Kilogram Dry Weight

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-6 (2-3.5' Fill)
Collection Date: 9/6/2017 09:25 AM

Work Order: 1709440
Lab ID: 1709440-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 9/19/17		Analyst: RSH
Mercury	0.015		0.0031	0.010	mg/Kg-dry	1	9/19/2017 12:09
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 9/12/17		Analyst: JF
Arsenic	2.9		0.26	0.88	mg/Kg-dry	4	9/13/2017 03:45
Barium	39		0.25	0.83	mg/Kg-dry	4	9/13/2017 03:45
Cadmium	0.13		0.014	0.050	mg/Kg-dry	4	9/13/2017 03:45
Chromium	12		0.085	0.28	mg/Kg-dry	4	9/13/2017 03:45
Lead	12	B	0.028	0.093	mg/Kg-dry	4	9/13/2017 03:45
Selenium	0.57	J	0.53	1.8	mg/Kg-dry	4	9/13/2017 03:45
Silver	0.027	J	0.014	0.050	mg/Kg-dry	4	9/13/2017 03:45
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 9/11/17		Analyst: RM
2-Chloronaphthalene	U		4.4	44	µg/Kg-dry	1	9/11/2017 23:33
2-Methylnaphthalene	U		7.1	44	µg/Kg-dry	1	9/11/2017 23:33
Acenaphthene	U		3.1	44	µg/Kg-dry	1	9/11/2017 23:33
Acenaphthylene	U		3.9	44	µg/Kg-dry	1	9/11/2017 23:33
Anthracene	U		1.6	44	µg/Kg-dry	1	9/11/2017 23:33
Benzo(a)anthracene	85		2.7	44	µg/Kg-dry	1	9/11/2017 23:33
Benzo(a)pyrene	140		1.1	44	µg/Kg-dry	1	9/11/2017 23:33
Benzo(b)fluoranthene	190		1.7	44	µg/Kg-dry	1	9/11/2017 23:33
Benzo(g,h,i)perylene	250		2.9	44	µg/Kg-dry	1	9/11/2017 23:33
Benzo(k)fluoranthene	110		2.3	44	µg/Kg-dry	1	9/11/2017 23:33
Chrysene	94		1.7	44	µg/Kg-dry	1	9/11/2017 23:33
Dibenzo(a,h)anthracene	73		1.4	44	µg/Kg-dry	1	9/11/2017 23:33
Fluoranthene	92		1.3	44	µg/Kg-dry	1	9/11/2017 23:33
Fluorene	U		1.4	44	µg/Kg-dry	1	9/11/2017 23:33
Indeno(1,2,3-cd)pyrene	170		1.3	44	µg/Kg-dry	1	9/11/2017 23:33
Naphthalene	U		8.2	44	µg/Kg-dry	1	9/11/2017 23:33
Phenanthrene	U		1.5	44	µg/Kg-dry	1	9/11/2017 23:33
Pyrene	110		1.6	44	µg/Kg-dry	1	9/11/2017 23:33
Surr: 2-Fluorobiphenyl	84.6			20-140	%REC	1	9/11/2017 23:33
Surr: 4-Terphenyl-d14	103			22-172	%REC	1	9/11/2017 23:33
Surr: Nitrobenzene-d5	80.7			8-140	%REC	1	9/11/2017 23:33
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B				Analyst: WH
1,1,1-Trichloroethane	U		10	34	µg/Kg-dry	1	9/12/2017 03:26
1,1,2,2-Tetrachloroethane	U		8.6	28	µg/Kg-dry	1	9/13/2017 12:13
1,1,2-Trichloroethane	U		11	35	µg/Kg-dry	1	9/12/2017 03:26
1,1-Dichloroethane	U		9.0	30	µg/Kg-dry	1	9/12/2017 03:26
1,1-Dichloroethene	U		9.5	32	µg/Kg-dry	1	9/12/2017 03:26

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-6 (2-3.5' Fill)
Collection Date: 9/6/2017 09:25 AM

Work Order: 1709440
Lab ID: 1709440-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		16	52	µg/Kg-dry	1	9/12/2017 03:26
1,2,4-Trichlorobenzene	U		26	87	µg/Kg-dry	1	9/12/2017 03:26
1,2-Dibromo-3-chloropropane	U		14	48	µg/Kg-dry	1	9/12/2017 03:26
1,2-Dibromoethane	U		12	39	µg/Kg-dry	1	9/12/2017 03:26
1,2-Dichlorobenzene	U		11	35	µg/Kg-dry	1	9/12/2017 03:26
1,2-Dichloroethane	U		9.6	32	µg/Kg-dry	1	9/12/2017 03:26
1,2-Dichloropropane	U		9.8	33	µg/Kg-dry	1	9/12/2017 03:26
1,3-Dichlorobenzene	U		11	38	µg/Kg-dry	1	9/12/2017 03:26
1,4-Dichlorobenzene	U		9.3	31	µg/Kg-dry	1	9/12/2017 03:26
2-Butanone	U		48	160	µg/Kg-dry	1	9/12/2017 03:26
2-Hexanone	U		24	78	µg/Kg-dry	1	9/12/2017 03:26
4-Methyl-2-pentanone	U		26	86	µg/Kg-dry	1	9/12/2017 03:26
Acetone	U		64	210	µg/Kg-dry	1	9/12/2017 03:26
Benzene	U		8.0	27	µg/Kg-dry	1	9/12/2017 03:26
Bromochloromethane	U		16	53	µg/Kg-dry	1	9/12/2017 03:26
Bromodichloromethane	U		9.5	32	µg/Kg-dry	1	9/12/2017 03:26
Bromoform	U		13	42	µg/Kg-dry	1	9/12/2017 03:26
Bromomethane	U		15	51	µg/Kg-dry	1	9/12/2017 03:26
Carbon disulfide	U		12	40	µg/Kg-dry	1	9/12/2017 03:26
Carbon tetrachloride	U		6.3	21	µg/Kg-dry	1	9/12/2017 03:26
Chlorobenzene	U		11	35	µg/Kg-dry	1	9/12/2017 03:26
Chloroethane	U		23	75	µg/Kg-dry	1	9/12/2017 03:26
Chloroform	U		12	40	µg/Kg-dry	1	9/12/2017 03:26
Chloromethane	U		14	48	µg/Kg-dry	1	9/12/2017 03:26
cis-1,2-Dichloroethene	U		10	33	µg/Kg-dry	1	9/12/2017 03:26
cis-1,3-Dichloropropene	U		14	45	µg/Kg-dry	1	9/12/2017 03:26
Cyclohexane	U		18	59	µg/Kg-dry	1	9/12/2017 03:26
Dibromochloromethane	U		8.1	27	µg/Kg-dry	1	9/12/2017 03:26
Dichlorodifluoromethane	U		16	52	µg/Kg-dry	1	9/12/2017 03:26
Ethylbenzene	U		8.3	28	µg/Kg-dry	1	9/12/2017 03:26
Isopropylbenzene	U		14	46	µg/Kg-dry	1	9/12/2017 03:26
m,p-Xylene	U		16	53	µg/Kg-dry	1	9/12/2017 03:26
Methyl tert-butyl ether	U		12	38	µg/Kg-dry	1	9/12/2017 03:26
Methylcyclohexane	U		15	51	µg/Kg-dry	1	9/12/2017 03:26
Methylene chloride	U		16	54	µg/Kg-dry	1	9/12/2017 03:26
o-Xylene	U		11	38	µg/Kg-dry	1	9/12/2017 03:26
Styrene	U		25	83	µg/Kg-dry	1	9/12/2017 03:26
Tetrachloroethene	U		17	58	µg/Kg-dry	1	9/12/2017 03:26
Toluene	U		12	39	µg/Kg-dry	1	9/12/2017 03:26
trans-1,2-Dichloroethene	U		10	33	µg/Kg-dry	1	9/12/2017 03:26

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-6 (2-3.5' Fill)
Collection Date: 9/6/2017 09:25 AM

Work Order: 1709440
Lab ID: 1709440-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
trans-1,3-Dichloropropene	U		6.3	21	µg/Kg-dry	1	9/12/2017 03:26
Trichloroethene	U		9.4	32	µg/Kg-dry	1	9/12/2017 03:26
Trichlorofluoromethane	U		6.8	23	µg/Kg-dry	1	9/12/2017 03:26
Vinyl chloride	U		11	37	µg/Kg-dry	1	9/12/2017 03:26
Xylenes, Total	U		27	91	µg/Kg-dry	1	9/12/2017 03:26
Surr: 1,2-Dichloroethane-d4	93.2			70-130	%REC	1	9/12/2017 03:26
Surr: 1,2-Dichloroethane-d4	94.9			70-130	%REC	1	9/13/2017 12:13
Surr: 4-Bromofluorobenzene	98.0			70-130	%REC	1	9/12/2017 03:26
Surr: 4-Bromofluorobenzene	96.8			70-130	%REC	1	9/13/2017 12:13
Surr: Dibromofluoromethane	94.4			70-130	%REC	1	9/12/2017 03:26
Surr: Dibromofluoromethane	97.4			70-130	%REC	1	9/13/2017 12:13
Surr: Toluene-d8	103			70-130	%REC	1	9/12/2017 03:26
Surr: Toluene-d8	99.8			70-130	%REC	1	9/13/2017 12:13
MOISTURE			Method: SW3550C				Analyst: NW
Moisture	8.3		0.025	0.050	% of sample	1	9/14/2017 18:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-6 (12-13.5')
Collection Date: 9/6/2017 09:49 AM

Work Order: 1709440
Lab ID: 1709440-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 9/19/17		Analyst: RSH
Mercury	U		0.0030	0.010	mg/Kg-dry	1	9/19/2017 12:11
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 9/12/17		Analyst: JF
Arsenic	2.0		0.25	0.82	mg/Kg-dry	4	9/13/2017 05:15
Barium	9.6		0.23	0.78	mg/Kg-dry	4	9/13/2017 05:15
Cadmium	0.11		0.013	0.047	mg/Kg-dry	4	9/13/2017 05:15
Chromium	4.8		0.080	0.27	mg/Kg-dry	4	9/13/2017 05:15
Lead	3.8	B	0.027	0.087	mg/Kg-dry	4	9/13/2017 05:15
Selenium	0.56	J	0.50	1.7	mg/Kg-dry	4	9/13/2017 05:15
Silver	0.019	J	0.013	0.047	mg/Kg-dry	4	9/13/2017 05:15
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 9/11/17		Analyst: RM
2-Chloronaphthalene	U		4.7	47	µg/Kg-dry	1	9/11/2017 23:47
2-Methylnaphthalene	U		7.7	47	µg/Kg-dry	1	9/11/2017 23:47
Acenaphthene	U		3.4	47	µg/Kg-dry	1	9/11/2017 23:47
Acenaphthylene	U		4.2	47	µg/Kg-dry	1	9/11/2017 23:47
Anthracene	U		1.7	47	µg/Kg-dry	1	9/11/2017 23:47
Benzo(a)anthracene	U		2.9	47	µg/Kg-dry	1	9/11/2017 23:47
Benzo(a)pyrene	U		1.2	47	µg/Kg-dry	1	9/11/2017 23:47
Benzo(b)fluoranthene	U		1.8	47	µg/Kg-dry	1	9/11/2017 23:47
Benzo(g,h,i)perylene	U		3.2	47	µg/Kg-dry	1	9/11/2017 23:47
Benzo(k)fluoranthene	U		2.5	47	µg/Kg-dry	1	9/11/2017 23:47
Chrysene	U		1.8	47	µg/Kg-dry	1	9/11/2017 23:47
Dibenzo(a,h)anthracene	U		1.5	47	µg/Kg-dry	1	9/11/2017 23:47
Fluoranthene	U		1.4	47	µg/Kg-dry	1	9/11/2017 23:47
Fluorene	U		1.5	47	µg/Kg-dry	1	9/11/2017 23:47
Indeno(1,2,3-cd)pyrene	U		1.5	47	µg/Kg-dry	1	9/11/2017 23:47
Naphthalene	U		8.9	47	µg/Kg-dry	1	9/11/2017 23:47
Phenanthrene	U		1.6	47	µg/Kg-dry	1	9/11/2017 23:47
Pyrene	U		1.7	47	µg/Kg-dry	1	9/11/2017 23:47
Surr: 2-Fluorobiphenyl	94.6			20-140	%REC	1	9/11/2017 23:47
Surr: 4-Terphenyl-d14	121			22-172	%REC	1	9/11/2017 23:47
Surr: Nitrobenzene-d5	88.4			8-140	%REC	1	9/11/2017 23:47
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B				Analyst: WH
1,1,1-Trichloroethane	U		11	37	µg/Kg-dry	1	9/12/2017 03:47
1,1,2,2-Tetrachloroethane	U		9.4	31	µg/Kg-dry	1	9/13/2017 12:34
1,1,2-Trichloroethane	U		12	39	µg/Kg-dry	1	9/12/2017 03:47
1,1-Dichloroethane	U		9.9	33	µg/Kg-dry	1	9/12/2017 03:47
1,1-Dichloroethene	U		10	35	µg/Kg-dry	1	9/12/2017 03:47

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-6 (12-13.5')
Collection Date: 9/6/2017 09:49 AM

Work Order: 1709440
Lab ID: 1709440-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		17	57	µg/Kg-dry	1	9/12/2017 03:47
1,2,4-Trichlorobenzene	U		29	96	µg/Kg-dry	1	9/12/2017 03:47
1,2-Dibromo-3-chloropropane	U		16	53	µg/Kg-dry	1	9/12/2017 03:47
1,2-Dibromoethane	U		13	43	µg/Kg-dry	1	9/12/2017 03:47
1,2-Dichlorobenzene	U		12	39	µg/Kg-dry	1	9/12/2017 03:47
1,2-Dichloroethane	U		11	35	µg/Kg-dry	1	9/12/2017 03:47
1,2-Dichloropropane	U		11	36	µg/Kg-dry	1	9/12/2017 03:47
1,3-Dichlorobenzene	U		13	42	µg/Kg-dry	1	9/12/2017 03:47
1,4-Dichlorobenzene	U		10	34	µg/Kg-dry	1	9/12/2017 03:47
2-Butanone	U		52	170	µg/Kg-dry	1	9/12/2017 03:47
2-Hexanone	U		26	86	µg/Kg-dry	1	9/12/2017 03:47
4-Methyl-2-pentanone	U		28	95	µg/Kg-dry	1	9/12/2017 03:47
Acetone	U		71	240	µg/Kg-dry	1	9/12/2017 03:47
Benzene	U		8.8	29	µg/Kg-dry	1	9/12/2017 03:47
Bromochloromethane	U		17	58	µg/Kg-dry	1	9/12/2017 03:47
Bromodichloromethane	U		10	35	µg/Kg-dry	1	9/12/2017 03:47
Bromoform	U		14	46	µg/Kg-dry	1	9/12/2017 03:47
Bromomethane	U		17	56	µg/Kg-dry	1	9/12/2017 03:47
Carbon disulfide	U		13	44	µg/Kg-dry	1	9/12/2017 03:47
Carbon tetrachloride	U		6.9	23	µg/Kg-dry	1	9/12/2017 03:47
Chlorobenzene	U		12	39	µg/Kg-dry	1	9/12/2017 03:47
Chloroethane	U		25	83	µg/Kg-dry	1	9/12/2017 03:47
Chloroform	U		13	44	µg/Kg-dry	1	9/12/2017 03:47
Chloromethane	U		16	52	µg/Kg-dry	1	9/12/2017 03:47
cis-1,2-Dichloroethene	U		11	37	µg/Kg-dry	1	9/12/2017 03:47
cis-1,3-Dichloropropene	U		15	50	µg/Kg-dry	1	9/12/2017 03:47
Cyclohexane	U		19	65	µg/Kg-dry	1	9/12/2017 03:47
Dibromochloromethane	U		8.9	30	µg/Kg-dry	1	9/12/2017 03:47
Dichlorodifluoromethane	U		17	57	µg/Kg-dry	1	9/12/2017 03:47
Ethylbenzene	U		9.1	30	µg/Kg-dry	1	9/12/2017 03:47
Isopropylbenzene	U		15	51	µg/Kg-dry	1	9/12/2017 03:47
m,p-Xylene	U		18	58	µg/Kg-dry	1	9/12/2017 03:47
Methyl tert-butyl ether	U		13	42	µg/Kg-dry	1	9/12/2017 03:47
Methylcyclohexane	U		17	56	µg/Kg-dry	1	9/12/2017 03:47
Methylene chloride	U		18	59	µg/Kg-dry	1	9/12/2017 03:47
o-Xylene	U		13	42	µg/Kg-dry	1	9/12/2017 03:47
Styrene	U		27	92	µg/Kg-dry	1	9/12/2017 03:47
Tetrachloroethene	U		19	64	µg/Kg-dry	1	9/12/2017 03:47
Toluene	U		13	43	µg/Kg-dry	1	9/12/2017 03:47
trans-1,2-Dichloroethene	U		11	37	µg/Kg-dry	1	9/12/2017 03:47

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-6 (12-13.5')
Collection Date: 9/6/2017 09:49 AM

Work Order: 1709440
Lab ID: 1709440-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
trans-1,3-Dichloropropene	U		7.0	23	µg/Kg-dry	1	9/12/2017 03:47
Trichloroethene	U		10	35	µg/Kg-dry	1	9/12/2017 03:47
Trichlorofluoromethane	U		7.5	25	µg/Kg-dry	1	9/12/2017 03:47
Vinyl chloride	U		12	41	µg/Kg-dry	1	9/12/2017 03:47
Xylenes, Total	U		30	100	µg/Kg-dry	1	9/12/2017 03:47
Surr: 1,2-Dichloroethane-d4	96.4			70-130	%REC	1	9/12/2017 03:47
Surr: 1,2-Dichloroethane-d4	95.1			70-130	%REC	1	9/13/2017 12:34
Surr: 4-Bromofluorobenzene	94.0			70-130	%REC	1	9/12/2017 03:47
Surr: 4-Bromofluorobenzene	95.2			70-130	%REC	1	9/13/2017 12:34
Surr: Dibromofluoromethane	94.2			70-130	%REC	1	9/12/2017 03:47
Surr: Dibromofluoromethane	96.0			70-130	%REC	1	9/13/2017 12:34
Surr: Toluene-d8	99.0			70-130	%REC	1	9/12/2017 03:47
Surr: Toluene-d8	97.4			70-130	%REC	1	9/13/2017 12:34
MOISTURE			Method: SW3550C				Analyst: NW
Moisture	13		0.025	0.050	% of sample	1	9/14/2017 18:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-6A (2-3.5' Fill)
Collection Date: 9/6/2017 12:17 PM

Work Order: 1709440
Lab ID: 1709440-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 9/19/17		Analyst: RSH
Mercury	0.0051	J	0.0028	0.0095	mg/Kg-dry	1	9/19/2017 12:14
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 9/12/17		Analyst: JF
Arsenic	2.3		0.25	0.82	mg/Kg-dry	4	9/13/2017 05:20
Barium	16		0.23	0.78	mg/Kg-dry	4	9/13/2017 05:20
Cadmium	0.10		0.013	0.047	mg/Kg-dry	4	9/13/2017 05:20
Chromium	4.2		0.080	0.27	mg/Kg-dry	4	9/13/2017 05:20
Lead	5.2	B	0.027	0.087	mg/Kg-dry	4	9/13/2017 05:20
Selenium	0.51	J	0.50	1.7	mg/Kg-dry	4	9/13/2017 05:20
Silver	U		0.013	0.047	mg/Kg-dry	4	9/13/2017 05:20
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 9/11/17		Analyst: RM
2-Chloronaphthalene	U		4.3	43	µg/Kg-dry	1	9/12/2017 12:01
2-Methylnaphthalene	U		7.0	43	µg/Kg-dry	1	9/12/2017 12:01
Acenaphthene	U		3.0	43	µg/Kg-dry	1	9/12/2017 12:01
Acenaphthylene	U		3.8	43	µg/Kg-dry	1	9/12/2017 12:01
Anthracene	U		1.6	43	µg/Kg-dry	1	9/12/2017 12:01
Benzo(a)anthracene	U		2.6	43	µg/Kg-dry	1	9/12/2017 12:01
Benzo(a)pyrene	U		1.1	43	µg/Kg-dry	1	9/12/2017 12:01
Benzo(b)fluoranthene	U		1.6	43	µg/Kg-dry	1	9/12/2017 12:01
Benzo(g,h,i)perylene	U		2.9	43	µg/Kg-dry	1	9/12/2017 12:01
Benzo(k)fluoranthene	U		2.2	43	µg/Kg-dry	1	9/12/2017 12:01
Chrysene	U		1.6	43	µg/Kg-dry	1	9/12/2017 12:01
Dibenzo(a,h)anthracene	U		1.4	43	µg/Kg-dry	1	9/12/2017 12:01
Fluoranthene	U		1.2	43	µg/Kg-dry	1	9/12/2017 12:01
Fluorene	U		1.4	43	µg/Kg-dry	1	9/12/2017 12:01
Indeno(1,2,3-cd)pyrene	U		1.3	43	µg/Kg-dry	1	9/12/2017 12:01
Naphthalene	U		8.1	43	µg/Kg-dry	1	9/12/2017 12:01
Phenanthrene	U		1.5	43	µg/Kg-dry	1	9/12/2017 12:01
Pyrene	U		1.6	43	µg/Kg-dry	1	9/12/2017 12:01
Surr: 2-Fluorobiphenyl	91.5			20-140	%REC	1	9/12/2017 12:01
Surr: 4-Terphenyl-d14	124			22-172	%REC	1	9/12/2017 12:01
Surr: Nitrobenzene-d5	90.3			8-140	%REC	1	9/12/2017 12:01
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B				Analyst: WH
1,1,1-Trichloroethane	U		10	33	µg/Kg-dry	1	9/12/2017 04:08
1,1,2,2-Tetrachloroethane	U		8.4	28	µg/Kg-dry	1	9/13/2017 12:55
1,1,2-Trichloroethane	U		10	35	µg/Kg-dry	1	9/12/2017 04:08
1,1-Dichloroethane	U		8.9	30	µg/Kg-dry	1	9/12/2017 04:08
1,1-Dichloroethene	U		9.4	31	µg/Kg-dry	1	9/12/2017 04:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-6A (2-3.5' Fill)
Collection Date: 9/6/2017 12:17 PM

Work Order: 1709440
Lab ID: 1709440-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		15	51	µg/Kg-dry	1	9/12/2017 04:08
1,2,4-Trichlorobenzene	U		26	86	µg/Kg-dry	1	9/12/2017 04:08
1,2-Dibromo-3-chloropropane	U		14	47	µg/Kg-dry	1	9/12/2017 04:08
1,2-Dibromoethane	U		12	39	µg/Kg-dry	1	9/12/2017 04:08
1,2-Dichlorobenzene	U		10	35	µg/Kg-dry	1	9/12/2017 04:08
1,2-Dichloroethane	U		9.5	32	µg/Kg-dry	1	9/12/2017 04:08
1,2-Dichloropropane	U		9.7	32	µg/Kg-dry	1	9/12/2017 04:08
1,3-Dichlorobenzene	U		11	37	µg/Kg-dry	1	9/12/2017 04:08
1,4-Dichlorobenzene	U		9.1	30	µg/Kg-dry	1	9/12/2017 04:08
2-Butanone	U		47	160	µg/Kg-dry	1	9/12/2017 04:08
2-Hexanone	U		23	77	µg/Kg-dry	1	9/12/2017 04:08
4-Methyl-2-pentanone	U		25	85	µg/Kg-dry	1	9/12/2017 04:08
Acetone	U		63	210	µg/Kg-dry	1	9/12/2017 04:08
Benzene	U		7.9	26	µg/Kg-dry	1	9/12/2017 04:08
Bromochloromethane	U		16	52	µg/Kg-dry	1	9/12/2017 04:08
Bromodichloromethane	U		9.4	31	µg/Kg-dry	1	9/12/2017 04:08
Bromoform	U		12	41	µg/Kg-dry	1	9/12/2017 04:08
Bromomethane	U		15	50	µg/Kg-dry	1	9/12/2017 04:08
Carbon disulfide	U		12	39	µg/Kg-dry	1	9/12/2017 04:08
Carbon tetrachloride	U		6.2	21	µg/Kg-dry	1	9/12/2017 04:08
Chlorobenzene	U		10	35	µg/Kg-dry	1	9/12/2017 04:08
Chloroethane	U		22	74	µg/Kg-dry	1	9/12/2017 04:08
Chloroform	U		12	39	µg/Kg-dry	1	9/12/2017 04:08
Chloromethane	U		14	47	µg/Kg-dry	1	9/12/2017 04:08
cis-1,2-Dichloroethene	U		9.9	33	µg/Kg-dry	1	9/12/2017 04:08
cis-1,3-Dichloropropene	U		13	45	µg/Kg-dry	1	9/12/2017 04:08
Cyclohexane	U		17	58	µg/Kg-dry	1	9/12/2017 04:08
Dibromochloromethane	U		8.0	27	µg/Kg-dry	1	9/12/2017 04:08
Dichlorodifluoromethane	U		15	51	µg/Kg-dry	1	9/12/2017 04:08
Ethylbenzene	U		8.1	27	µg/Kg-dry	1	9/12/2017 04:08
Isopropylbenzene	U		14	46	µg/Kg-dry	1	9/12/2017 04:08
m,p-Xylene	U		16	52	µg/Kg-dry	1	9/12/2017 04:08
Methyl tert-butyl ether	U		11	38	µg/Kg-dry	1	9/12/2017 04:08
Methylcyclohexane	U		15	50	µg/Kg-dry	1	9/12/2017 04:08
Methylene chloride	U		16	53	µg/Kg-dry	1	9/12/2017 04:08
o-Xylene	U		11	38	µg/Kg-dry	1	9/12/2017 04:08
Styrene	U		25	82	µg/Kg-dry	1	9/12/2017 04:08
Tetrachloroethene	U		17	57	µg/Kg-dry	1	9/12/2017 04:08
Toluene	U		12	39	µg/Kg-dry	1	9/12/2017 04:08
trans-1,2-Dichloroethene	U		9.9	33	µg/Kg-dry	1	9/12/2017 04:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-6A (2-3.5' Fill)
Collection Date: 9/6/2017 12:17 PM

Work Order: 1709440
Lab ID: 1709440-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
trans-1,3-Dichloropropene	U		6.2	21	µg/Kg-dry	1	9/12/2017 04:08
Trichloroethene	U		9.3	31	µg/Kg-dry	1	9/12/2017 04:08
Trichlorofluoromethane	U		6.7	22	µg/Kg-dry	1	9/12/2017 04:08
Vinyl chloride	U		11	37	µg/Kg-dry	1	9/12/2017 04:08
Xylenes, Total	U		27	90	µg/Kg-dry	1	9/12/2017 04:08
Surr: 1,2-Dichloroethane-d4	95.9			70-130	%REC	1	9/12/2017 04:08
Surr: 1,2-Dichloroethane-d4	94.6			70-130	%REC	1	9/13/2017 12:55
Surr: 4-Bromofluorobenzene	94.6			70-130	%REC	1	9/12/2017 04:08
Surr: 4-Bromofluorobenzene	95.0			70-130	%REC	1	9/13/2017 12:55
Surr: Dibromofluoromethane	94.2			70-130	%REC	1	9/12/2017 04:08
Surr: Dibromofluoromethane	93.8			70-130	%REC	1	9/13/2017 12:55
Surr: Toluene-d8	99.6			70-130	%REC	1	9/12/2017 04:08
Surr: Toluene-d8	95.2			70-130	%REC	1	9/13/2017 12:55
MOISTURE			Method: SW3550C				Analyst: NW
Moisture	7.6		0.025	0.050	% of sample	1	9/14/2017 18:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-6A (9.5-11')
Collection Date: 9/6/2017 12:30 PM

Work Order: 1709440
Lab ID: 1709440-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 9/19/17		Analyst: RSH
Mercury	0.018		0.0031	0.010	mg/Kg-dry	1	9/19/2017 12:24
METALS BY ICP-MS							
			Method: SW6020A		Prep: SW3050B / 9/18/17		Analyst: JF
Arsenic	4.2		0.065	0.22	mg/Kg-dry	1	9/18/2017 17:12
Barium	39		0.061	0.20	mg/Kg-dry	1	9/18/2017 17:12
Cadmium	0.040		0.0035	0.012	mg/Kg-dry	1	9/18/2017 17:12
Chromium	13		0.021	0.070	mg/Kg-dry	1	9/18/2017 17:12
Lead	8.8		0.0070	0.023	mg/Kg-dry	1	9/18/2017 17:12
Selenium	1.0		0.13	0.44	mg/Kg-dry	1	9/18/2017 17:12
Silver	0.016		0.0035	0.012	mg/Kg-dry	1	9/18/2017 17:12
SEMI-VOLATILE ORGANIC COMPOUNDS							
			Method: SW846 8270D		Prep: SW3546 / 9/11/17		Analyst: RM
2-Chloronaphthalene	U		5.0	50	µg/Kg-dry	1	9/12/2017 12:15
2-Methylnaphthalene	U		8.1	50	µg/Kg-dry	1	9/12/2017 12:15
Acenaphthene	U		3.5	50	µg/Kg-dry	1	9/12/2017 12:15
Acenaphthylene	U		4.4	50	µg/Kg-dry	1	9/12/2017 12:15
Anthracene	U		1.8	50	µg/Kg-dry	1	9/12/2017 12:15
Benzo(a)anthracene	U		3.1	50	µg/Kg-dry	1	9/12/2017 12:15
Benzo(a)pyrene	U		1.2	50	µg/Kg-dry	1	9/12/2017 12:15
Benzo(b)fluoranthene	U		1.9	50	µg/Kg-dry	1	9/12/2017 12:15
Benzo(g,h,i)perylene	U		3.3	50	µg/Kg-dry	1	9/12/2017 12:15
Benzo(k)fluoranthene	U		2.6	50	µg/Kg-dry	1	9/12/2017 12:15
Chrysene	U		1.9	50	µg/Kg-dry	1	9/12/2017 12:15
Dibenzo(a,h)anthracene	U		1.6	50	µg/Kg-dry	1	9/12/2017 12:15
Fluoranthene	U		1.4	50	µg/Kg-dry	1	9/12/2017 12:15
Fluorene	U		1.6	50	µg/Kg-dry	1	9/12/2017 12:15
Indeno(1,2,3-cd)pyrene	U		1.5	50	µg/Kg-dry	1	9/12/2017 12:15
Naphthalene	U		9.4	50	µg/Kg-dry	1	9/12/2017 12:15
Phenanthrene	U		1.7	50	µg/Kg-dry	1	9/12/2017 12:15
Pyrene	U		1.8	50	µg/Kg-dry	1	9/12/2017 12:15
Surr: 2-Fluorobiphenyl	94.2			20-140	%REC	1	9/12/2017 12:15
Surr: 4-Terphenyl-d14	119			22-172	%REC	1	9/12/2017 12:15
Surr: Nitrobenzene-d5	91.9			8-140	%REC	1	9/12/2017 12:15
VOLATILE ORGANIC COMPOUNDS							
			Method: SW8260B				Analyst: WH
1,1,1-Trichloroethane	U		12	40	µg/Kg-dry	1	9/12/2017 04:29
1,1,2,2-Tetrachloroethane	U		10	34	µg/Kg-dry	1	9/13/2017 01:16
1,1,2-Trichloroethane	U		13	42	µg/Kg-dry	1	9/12/2017 04:29
1,1-Dichloroethane	U		11	36	µg/Kg-dry	1	9/12/2017 04:29
1,1-Dichloroethene	U		11	38	µg/Kg-dry	1	9/12/2017 04:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-6A (9.5-11')
Collection Date: 9/6/2017 12:30 PM

Work Order: 1709440
Lab ID: 1709440-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
1,2,3-Trichlorobenzene	U		19	62	µg/Kg-dry	1	9/12/2017 04:29
1,2,4-Trichlorobenzene	U		31	100	µg/Kg-dry	1	9/12/2017 04:29
1,2-Dibromo-3-chloropropane	U		17	57	µg/Kg-dry	1	9/12/2017 04:29
1,2-Dibromoethane	U		14	47	µg/Kg-dry	1	9/12/2017 04:29
1,2-Dichlorobenzene	U		13	42	µg/Kg-dry	1	9/12/2017 04:29
1,2-Dichloroethane	U		12	38	µg/Kg-dry	1	9/12/2017 04:29
1,2-Dichloropropane	U		12	39	µg/Kg-dry	1	9/12/2017 04:29
1,3-Dichlorobenzene	U		14	45	µg/Kg-dry	1	9/12/2017 04:29
1,4-Dichlorobenzene	U		11	37	µg/Kg-dry	1	9/12/2017 04:29
2-Butanone	U		57	190	µg/Kg-dry	1	9/12/2017 04:29
2-Hexanone	U		28	93	µg/Kg-dry	1	9/12/2017 04:29
4-Methyl-2-pentanone	U		31	100	µg/Kg-dry	1	9/12/2017 04:29
Acetone	U		77	260	µg/Kg-dry	1	9/12/2017 04:29
Benzene	U		9.6	32	µg/Kg-dry	1	9/12/2017 04:29
Bromochloromethane	U		19	63	µg/Kg-dry	1	9/12/2017 04:29
Bromodichloromethane	U		11	38	µg/Kg-dry	1	9/12/2017 04:29
Bromoform	U		15	50	µg/Kg-dry	1	9/12/2017 04:29
Bromomethane	U		18	61	µg/Kg-dry	1	9/12/2017 04:29
Carbon disulfide	U		14	48	µg/Kg-dry	1	9/12/2017 04:29
Carbon tetrachloride	U		7.5	25	µg/Kg-dry	1	9/12/2017 04:29
Chlorobenzene	U		13	42	µg/Kg-dry	1	9/12/2017 04:29
Chloroethane	U		27	90	µg/Kg-dry	1	9/12/2017 04:29
Chloroform	U		14	48	µg/Kg-dry	1	9/12/2017 04:29
Chloromethane	U		17	57	µg/Kg-dry	1	9/12/2017 04:29
cis-1,2-Dichloroethene	U		12	40	µg/Kg-dry	1	9/12/2017 04:29
cis-1,3-Dichloropropene	U		16	54	µg/Kg-dry	1	9/12/2017 04:29
Cyclohexane	U		21	70	µg/Kg-dry	1	9/12/2017 04:29
Dibromochloromethane	U		9.6	32	µg/Kg-dry	1	9/12/2017 04:29
Dichlorodifluoromethane	U		19	62	µg/Kg-dry	1	9/12/2017 04:29
Ethylbenzene	U		9.9	33	µg/Kg-dry	1	9/12/2017 04:29
Isopropylbenzene	U		17	55	µg/Kg-dry	1	9/12/2017 04:29
m,p-Xylene	U		19	63	µg/Kg-dry	1	9/12/2017 04:29
Methyl tert-butyl ether	U		14	46	µg/Kg-dry	1	9/12/2017 04:29
Methylcyclohexane	U		18	61	µg/Kg-dry	1	9/12/2017 04:29
Methylene chloride	U		19	64	µg/Kg-dry	1	9/12/2017 04:29
o-Xylene	U		14	46	µg/Kg-dry	1	9/12/2017 04:29
Styrene	U		30	100	µg/Kg-dry	1	9/12/2017 04:29
Tetrachloroethene	U		21	69	µg/Kg-dry	1	9/12/2017 04:29
Toluene	U		14	47	µg/Kg-dry	1	9/12/2017 04:29
trans-1,2-Dichloroethene	U		12	40	µg/Kg-dry	1	9/12/2017 04:29

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: RF-B-6A (9.5-11')
Collection Date: 9/6/2017 12:30 PM

Work Order: 1709440
Lab ID: 1709440-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
trans-1,3-Dichloropropene	U		7.6	25	µg/Kg-dry	1	9/12/2017 04:29
Trichloroethene	U		11	38	µg/Kg-dry	1	9/12/2017 04:29
Trichlorofluoromethane	U		8.1	27	µg/Kg-dry	1	9/12/2017 04:29
Vinyl chloride	U		13	45	µg/Kg-dry	1	9/12/2017 04:29
Xylenes, Total	U		33	110	µg/Kg-dry	1	9/12/2017 04:29
Surr: 1,2-Dichloroethane-d4	96.4			70-130	%REC	1	9/12/2017 04:29
Surr: 1,2-Dichloroethane-d4	93.2			70-130	%REC	1	9/13/2017 01:16
Surr: 4-Bromofluorobenzene	94.5			70-130	%REC	1	9/12/2017 04:29
Surr: 4-Bromofluorobenzene	94.8			70-130	%REC	1	9/13/2017 01:16
Surr: Dibromofluoromethane	96.0			70-130	%REC	1	9/12/2017 04:29
Surr: Dibromofluoromethane	92.7			70-130	%REC	1	9/13/2017 01:16
Surr: Toluene-d8	98.0			70-130	%REC	1	9/12/2017 04:29
Surr: Toluene-d8	96.9			70-130	%REC	1	9/13/2017 01:16
MOISTURE			Method: SW3550C				Analyst: NW
Moisture	17		0.025	0.050	% of sample	1	9/16/2017 16:45

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: Trip Blank
Collection Date: 9/6/2017

Work Order: 1709440
Lab ID: 1709440-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B			Analyst: WH	
1,1,1-Trichloroethane	U		8.6	28	µg/Kg-dry	1	9/12/2017 04:50
1,1,2,2-Tetrachloroethane	U		7.2	24	µg/Kg-dry	1	9/13/2017 01:37
1,1,2-Trichloroethane	U		9.0	30	µg/Kg-dry	1	9/12/2017 04:50
1,1-Dichloroethane	U		7.6	25	µg/Kg-dry	1	9/12/2017 04:50
1,1-Dichloroethene	U		8.0	27	µg/Kg-dry	1	9/12/2017 04:50
1,2,3-Trichlorobenzene	U		13	44	µg/Kg-dry	1	9/12/2017 04:50
1,2,4-Trichlorobenzene	U		22	74	µg/Kg-dry	1	9/12/2017 04:50
1,2-Dibromo-3-chloropropane	U		12	41	µg/Kg-dry	1	9/12/2017 04:50
1,2-Dibromoethane	U		10	33	µg/Kg-dry	1	9/12/2017 04:50
1,2-Dichlorobenzene	U		8.9	30	µg/Kg-dry	1	9/12/2017 04:50
1,2-Dichloroethane	U		8.2	27	µg/Kg-dry	1	9/12/2017 04:50
1,2-Dichloropropane	U		8.3	28	µg/Kg-dry	1	9/12/2017 04:50
1,3-Dichlorobenzene	U		9.6	32	µg/Kg-dry	1	9/12/2017 04:50
1,4-Dichlorobenzene	U		7.8	26	µg/Kg-dry	1	9/12/2017 04:50
2-Butanone	U		40	130	µg/Kg-dry	1	9/12/2017 04:50
2-Hexanone	U		20	66	µg/Kg-dry	1	9/12/2017 04:50
4-Methyl-2-pentanone	U		22	73	µg/Kg-dry	1	9/12/2017 04:50
Acetone	U		54	180	µg/Kg-dry	1	9/12/2017 04:50
Benzene	U		6.8	23	µg/Kg-dry	1	9/12/2017 04:50
Bromochloromethane	U		13	45	µg/Kg-dry	1	9/12/2017 04:50
Bromodichloromethane	U		8.0	27	µg/Kg-dry	1	9/12/2017 04:50
Bromoform	U		11	35	µg/Kg-dry	1	9/12/2017 04:50
Bromomethane	U		13	43	µg/Kg-dry	1	9/12/2017 04:50
Carbon disulfide	U		10	34	µg/Kg-dry	1	9/12/2017 04:50
Carbon tetrachloride	U		5.3	18	µg/Kg-dry	1	9/12/2017 04:50
Chlorobenzene	U		9.0	30	µg/Kg-dry	1	9/12/2017 04:50
Chloroethane	U		19	64	µg/Kg-dry	1	9/12/2017 04:50
Chloroform	U		10	34	µg/Kg-dry	1	9/12/2017 04:50
Chloromethane	U		12	40	µg/Kg-dry	1	9/12/2017 04:50
cis-1,2-Dichloroethene	U		8.5	28	µg/Kg-dry	1	9/12/2017 04:50
cis-1,3-Dichloropropene	U		11	38	µg/Kg-dry	1	9/12/2017 04:50
Cyclohexane	U		15	50	µg/Kg-dry	1	9/12/2017 04:50
Dibromochloromethane	U		6.8	23	µg/Kg-dry	1	9/12/2017 04:50
Dichlorodifluoromethane	U		13	44	µg/Kg-dry	1	9/12/2017 04:50
Ethylbenzene	U		7.0	23	µg/Kg-dry	1	9/12/2017 04:50
Isopropylbenzene	U		12	39	µg/Kg-dry	1	9/12/2017 04:50
m,p-Xylene	U		13	45	µg/Kg-dry	1	9/12/2017 04:50
Methyl tert-butyl ether	U		9.8	32	µg/Kg-dry	1	9/12/2017 04:50

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 25-Sep-17

Client: Ramboll Environ US Corporation
Project: 21-41365B
Sample ID: Trip Blank
Collection Date: 9/6/2017

Work Order: 1709440
Lab ID: 1709440-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylcyclohexane	U		13	43	µg/Kg-dry	1	9/12/2017 04:50
Methylene chloride	U		14	46	µg/Kg-dry	1	9/12/2017 04:50
o-Xylene	U		9.7	32	µg/Kg-dry	1	9/12/2017 04:50
Styrene	U		21	71	µg/Kg-dry	1	9/12/2017 04:50
Tetrachloroethene	U		15	49	µg/Kg-dry	1	9/12/2017 04:50
Toluene	U		9.9	33	µg/Kg-dry	1	9/12/2017 04:50
trans-1,2-Dichloroethene	U		8.5	28	µg/Kg-dry	1	9/12/2017 04:50
trans-1,3-Dichloropropene	U		5.4	18	µg/Kg-dry	1	9/12/2017 04:50
Trichloroethene	U		8.0	27	µg/Kg-dry	1	9/12/2017 04:50
Trichlorofluoromethane	U		5.8	19	µg/Kg-dry	1	9/12/2017 04:50
Vinyl chloride	U		9.5	32	µg/Kg-dry	1	9/12/2017 04:50
Xylenes, Total	U		23	77	µg/Kg-dry	1	9/12/2017 04:50
Surr: 1,2-Dichloroethane-d4	95.6			70-130	%REC	1	9/12/2017 04:50
Surr: 1,2-Dichloroethane-d4	97.6			70-130	%REC	1	9/13/2017 01:37
Surr: 4-Bromofluorobenzene	94.0			70-130	%REC	1	9/12/2017 04:50
Surr: 4-Bromofluorobenzene	91.2			70-130	%REC	1	9/13/2017 01:37
Surr: Dibromofluoromethane	94.0			70-130	%REC	1	9/12/2017 04:50
Surr: Dibromofluoromethane	95.4			70-130	%REC	1	9/13/2017 01:37
Surr: Toluene-d8	98.5			70-130	%REC	1	9/12/2017 04:50
Surr: Toluene-d8	96.8			70-130	%REC	1	9/13/2017 01:37

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107584** Instrument ID **HG1** Method: **SW7471B**

MBLK		Sample ID: MBLK-107584-107584				Units: mg/Kg		Analysis Date: 9/19/2017 11:51 AM		
Client ID:		Run ID: HG1_170919A				SeqNo: 4645921		Prep Date: 9/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.020								

LCS		Sample ID: LCS-107584-107584				Units: mg/Kg		Analysis Date: 9/19/2017 11:53 AM		
Client ID:		Run ID: HG1_170919A				SeqNo: 4645922		Prep Date: 9/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1758	0.020	0.1665	0	106	80-120	0			

MS		Sample ID: 1709845-02BMS				Units: mg/Kg		Analysis Date: 9/19/2017 12:37 PM		
Client ID:		Run ID: HG1_170919A				SeqNo: 4645939		Prep Date: 9/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1736	0.018	0.1476	0.037	92.5	75-125	0			

MSD		Sample ID: 1709845-02BMSD				Units: mg/Kg		Analysis Date: 9/19/2017 12:39 PM		
Client ID:		Run ID: HG1_170919A				SeqNo: 4645940		Prep Date: 9/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1674	0.018	0.1473	0.037	88.5	75-125	0.1736	3.61	35	

The following samples were analyzed in this batch:

1709440-01C	1709440-02C	1709440-03C
1709440-04C		

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107275** Instrument ID **ICPMS2** Method: **SW6020A**

Sample ID: MBLK-107275-107275				Units: mg/Kg			Analysis Date: 9/13/2017 01:13 AM			
Client ID:		Run ID: ICPMS2_170912A			SeqNo: 4636287		Prep Date: 9/12/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.10								
Chromium	0.0372	0.25								J
Lead	0.03214	0.25								J
Selenium	U	0.25								
Silver	U	0.25								

LCS				Sample ID: LCS-107275-107275			Units: mg/Kg		Analysis Date: 9/13/2017 01:18 AM		
Client ID:			Run ID: ICPMS2_170912A			SeqNo: 4636288		Prep Date: 9/12/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	5.035	0.25	5	0	101	80-120	0				
Barium	5.02	0.25	5	0	100	80-120	0				
Cadmium	5.12	0.10	5	0	102	80-120	0				
Chromium	5.23	0.25	5	0	105	80-120	0				
Lead	5.03	0.25	5	0	101	80-120	0				
Selenium	4.934	0.25	5	0	98.7	80-120	0				
Silver	5.13	0.25	5	0	103	80-120	0				

MS				Sample ID: 1709386-04A MS			Units: mg/Kg		Analysis Date: 9/13/2017 01:50 AM		
Client ID:			Run ID: ICPMS2_170912A			SeqNo: 4636296		Prep Date: 9/12/2017		DF: 4	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	76.95	1.3	6.305	66.97	158	75-125	0			SO	
Barium	51.37	1.3	6.305	37.99	212	75-125	0			SO	
Cadmium	6.161	0.50	6.305	1.101	80.3	75-125	0				
Chromium	39.57	1.3	6.305	33.51	96.1	75-125	0			O	
Lead	330.6	1.3	6.305	335.1	-70.6	75-125	0			SO	
Selenium	4.837	1.3	6.305	0.445	69.7	75-125	0			S	
Silver	4.878	1.3	6.305	0.1908	74.3	75-125	0			S	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107275** Instrument ID **ICPMS2** Method: **SW6020A**

MSD				Sample ID: 1709386-04A MSD				Units: mg/Kg		Analysis Date: 9/13/2017 01:55 AM	
Client ID:			Run ID: ICPMS2_170912A			SeqNo: 4636298		Prep Date: 9/12/2017		DF: 4	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	73.94	1.3	6.289	66.97	111	75-125	76.95	3.99	20	O	
Barium	66.44	1.3	6.289	37.99	452	75-125	51.37	25.6	20	SRO	
Cadmium	7.167	0.50	6.289	1.101	96.5	75-125	6.161	15.1	20		
Chromium	38.29	1.3	6.289	33.51	76	75-125	39.57	3.29	20	O	
Lead	325.8	1.3	6.289	335.1	-148	75-125	330.6	1.48	20	SO	
Selenium	6.194	1.3	6.289	0.445	91.4	75-125	4.837	24.6	20	R	
Silver	5.864	1.3	6.289	0.1908	90.2	75-125	4.878	18.4	20		

The following samples were analyzed in this batch:

1709440-01C	1709440-02C	1709440-03C
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107515** Instrument ID **ICPMS3** Method: **SW6020A**

Sample ID: MBLK-107515-107515				Units: mg/Kg			Analysis Date: 9/18/2017 05:09 PM			
Client ID:		Run ID: ICPMS3_170918A			SeqNo: 4644178		Prep Date: 9/18/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.10								
Chromium	0.03275	0.25								J
Lead	0.0051	0.25								J
Selenium	U	0.25								

MBLK		Sample ID: MBLK-107515-107515					Units: mg/Kg		Analysis Date: 9/19/2017 12:42 PM		
Client ID:			Run ID: ICPMS3_170919A			SeqNo: 4645524		Prep Date: 9/18/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Silver	U	0.25									

LCS		Sample ID: LCS-107515-107515				Units: mg/Kg		Analysis Date: 9/18/2017 05:10 PM		
Client ID:		Run ID: ICPMS3_170918A			SeqNo: 4644179		Prep Date: 9/18/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.445	0.25	5	0	88.9	80-120	0			
Barium	4.765	0.25	5	0	95.3	80-120	0			
Cadmium	4.448	0.10	5	0	89	80-120	0			
Chromium	4.511	0.25	5	0	90.2	80-120	0			
Lead	4.657	0.25	5	0	93.1	80-120	0			
Selenium	4.612	0.25	5	0	92.2	80-120	0			
Silver	4.759	0.25	5	0	95.2	80-120	0			

MS				Sample ID: 1709463-01AMS				Units: mg/Kg			Analysis Date: 9/18/2017 05:15 PM			
Client ID:				Run ID: ICPMS3_170918A				SeqNo: 4644182			Prep Date: 9/18/2017		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Arsenic		6.249	0.32	6.386	0.7872	85.5	75-125		0					
Barium		20.31	0.32	6.386	12.46	123	75-125		0					
Cadmium		5.37	0.13	6.386	0.01647	83.8	75-125		0					
Chromium		9.13	0.32	6.386	2.749	99.9	75-125		0					
Lead		7.642	0.32	6.386	1.709	92.9	75-125		0					
Selenium		5.859	0.32	6.386	0.2901	87.2	75-125		0					
Silver		5.664	0.32	6.386	0.006154	88.6	75-125		0					

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107515** Instrument ID **ICPMS3** Method: **SW6020A**

MSD		Sample ID: 1709463-01AMSD				Units: mg/Kg		Analysis Date: 9/18/2017 05:16 PM		
Client ID:		Run ID: ICPMS3_170918A				SeqNo: 4644183		Prep Date: 9/18/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	6.498	0.32	6.427	0.7872	88.9	75-125	6.249	3.89	20	
Barium	20.6	0.32	6.427	12.46	127	75-125	20.31	1.41	20	S
Cadmium	5.489	0.13	6.427	0.01647	85.2	75-125	5.37	2.18	20	
Chromium	9.92	0.32	6.427	2.749	112	75-125	9.13	8.29	20	
Lead	7.916	0.32	6.427	1.709	96.6	75-125	7.642	3.51	20	
Selenium	6.175	0.32	6.427	0.2901	91.6	75-125	5.859	5.26	20	
Silver	5.916	0.32	6.427	0.006154	92	75-125	5.664	4.36	20	

The following samples were analyzed in this batch:

1709440-04C

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107176** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK		Sample ID: SBLKS1-107176-107176				Units: µg/Kg		Analysis Date: 9/11/2017 07:05 PM		
Client ID:		Run ID: SVMS6_170911A				SeqNo: 4635583		Prep Date: 9/11/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	U	42								
2-Methylnaphthalene	U	42								
Acenaphthene	U	42								
Acenaphthylene	U	42								
Anthracene	U	42								
Benzo(a)anthracene	U	42								
Benzo(a)pyrene	U	42								
Benzo(b)fluoranthene	U	42								
Benzo(g,h,i)perylene	U	42								
Benzo(k)fluoranthene	U	42								
Chrysene	U	42								
Dibenzo(a,h)anthracene	U	42								
Fluoranthene	U	42								
Fluorene	U	42								
Indeno(1,2,3-cd)pyrene	U	42								
Naphthalene	U	42								
Phenanthrene	U	42								
Pyrene	U	42								
<i>Surr: 2-Fluorobiphenyl</i>	3072	0	3333	0	92.2	20-140	0			
<i>Surr: 4-Terphenyl-d14</i>	4182	0	3333	0	125	22-172	0			
<i>Surr: Nitrobenzene-d5</i>	3250	0	3333	0	97.5	8-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107176** Instrument ID **SVMS6** Method: **SW846 8270D**

LCS		Sample ID: SLCSS1-107176-107176				Units: µg/Kg		Analysis Date: 9/11/2017 07:19 PM		
Client ID:		Run ID: SVMS6_170911A				SeqNo: 4635584		Prep Date: 9/11/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	1211	42	1333	0	90.9	40-140	0			
2-Methylnaphthalene	1185	42	1333	0	88.9	40-140	0			
Acenaphthene	1133	42	1333	0	85	40-140	0			
Acenaphthylene	1129	42	1333	0	84.7	40-140	0			
Anthracene	1235	42	1333	0	92.7	40-140	0			
Benzo(a)anthracene	1209	42	1333	0	90.7	40-140	0			
Benzo(a)pyrene	1236	42	1333	0	92.7	40-140	0			
Benzo(b)fluoranthene	1211	42	1333	0	90.9	40-140	0			
Benzo(g,h,i)perylene	1198	42	1333	0	89.9	40-140	0			
Benzo(k)fluoranthene	1197	42	1333	0	89.8	40-140	0			
Chrysene	1247	42	1333	0	93.5	40-140	0			
Dibenzo(a,h)anthracene	1213	42	1333	0	91	40-140	0			
Fluoranthene	1023	42	1333	0	76.8	40-140	0			
Fluorene	1186	42	1333	0	88.9	40-140	0			
Indeno(1,2,3-cd)pyrene	1235	42	1333	0	92.6	40-140	0			
Naphthalene	1105	42	1333	0	82.9	40-140	0			
Phenanthrene	1149	42	1333	0	86.2	40-140	0			
Pyrene	1169	42	1333	0	87.7	40-140	0			
<i>Surr: 2-Fluorobiphenyl</i>	<i>2948</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>88.5</i>	<i>20-140</i>	<i>0</i>			
<i>Surr: 4-Terphenyl-d14</i>	<i>3360</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>101</i>	<i>22-172</i>	<i>0</i>			
<i>Surr: Nitrobenzene-d5</i>	<i>2988</i>	<i>0</i>	<i>3333</i>	<i>0</i>	<i>89.7</i>	<i>8-140</i>	<i>0</i>			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107176** Instrument ID **SVMS6** Method: **SW846 8270D**

MS				Sample ID: 1709375-03B MS			Units: µg/Kg		Analysis Date: 9/11/2017 09:12 PM	
Client ID:				Run ID: SVMS6_170911A			SeqNo: 4635585		Prep Date: 9/11/2017	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
2-Chloronaphthalene	1302	41	1318	0	98.8	40-140	0			
2-Methylnaphthalene	1347	41	1318	0	102	40-140	0			
Acenaphthene	1244	41	1318	0	94.4	40-140	0			
Acenaphthylene	1284	41	1318	0	97.5	40-140	0			
Anthracene	1347	41	1318	0	102	40-140	0			
Benzo(a)anthracene	1303	41	1318	0	98.9	40-140	0			
Benzo(a)pyrene	1397	41	1318	0	106	40-140	0			
Benzo(b)fluoranthene	1290	41	1318	0	97.9	40-140	0			
Benzo(g,h,i)perylene	1356	41	1318	0	103	40-140	0			
Benzo(k)fluoranthene	1525	41	1318	0	116	40-140	0			
Chrysene	1332	41	1318	0	101	40-140	0			
Dibenzo(a,h)anthracene	1355	41	1318	0	103	40-140	0			
Fluoranthene	1169	41	1318	0	88.7	40-140	0			
Fluorene	1339	41	1318	0	102	40-140	0			
Indeno(1,2,3-cd)pyrene	1402	41	1318	0	106	40-140	0			
Naphthalene	1231	41	1318	0	93.4	40-140	0			
Phenanthrene	1292	41	1318	0	98	40-140	0			
Pyrene	1197	41	1318	0	90.8	40-140	0			
<i>Surr: 2-Fluorobiphenyl</i>	<i>3253</i>	<i>0</i>	<i>3295</i>	<i>0</i>	<i>98.7</i>	<i>20-140</i>	<i>0</i>			
<i>Surr: 4-Terphenyl-d14</i>	<i>3423</i>	<i>0</i>	<i>3295</i>	<i>0</i>	<i>104</i>	<i>22-172</i>	<i>0</i>			
<i>Surr: Nitrobenzene-d5</i>	<i>3458</i>	<i>0</i>	<i>3295</i>	<i>0</i>	<i>105</i>	<i>8-140</i>	<i>0</i>			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107176** Instrument ID **SVMS6** Method: **SW846 8270D**

MSD				Sample ID: 1709375-03B MSD			Units: µg/Kg		Analysis Date: 9/11/2017 09:26 PM		
Client ID:			Run ID: SVMS6_170911A			SeqNo: 4635586		Prep Date: 9/11/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
2-Chloronaphthalene	1311	41	1321	0	99.2	40-140	1302	0.658	30		
2-Methylnaphthalene	1248	41	1321	0	94.4	40-140	1347	7.67	30		
Acenaphthene	1244	41	1321	0	94.1	40-140	1244	0.0185	30		
Acenaphthylene	1271	41	1321	0	96.2	40-140	1284	1.06	30		
Anthracene	1479	41	1321	0	112	40-140	1347	9.35	30		
Benzo(a)anthracene	1305	41	1321	0	98.8	40-140	1303	0.172	30		
Benzo(a)pyrene	1428	41	1321	0	108	40-140	1397	2.15	30		
Benzo(b)fluoranthene	1361	41	1321	0	103	40-140	1290	5.35	30		
Benzo(g,h,i)perylene	1377	41	1321	0	104	40-140	1356	1.56	30		
Benzo(k)fluoranthene	1344	41	1321	0	102	40-140	1525	12.6	30		
Chrysene	1225	41	1321	0	92.7	40-140	1332	8.42	30		
Dibenzo(a,h)anthracene	1378	41	1321	0	104	40-140	1355	1.65	30		
Fluoranthene	1192	41	1321	0	90.2	40-140	1169	1.96	30		
Fluorene	1261	41	1321	0	95.5	40-140	1339	5.98	30		
Indeno(1,2,3-cd)pyrene	1440	41	1321	0	109	40-140	1402	2.67	30		
Naphthalene	1245	41	1321	0	94.2	40-140	1231	1.09	30		
Phenanthrene	1310	41	1321	0	99.2	40-140	1292	1.4	30		
Pyrene	1189	41	1321	0	90	40-140	1197	0.642	30		
Surr: 2-Fluorobiphenyl	3191	0	3304	0	96.6	20-140	3253	1.91	0		
Surr: 4-Terphenyl-d14	3973	0	3304	0	120	22-172	3423	14.9	0		
Surr: Nitrobenzene-d5	3620	0	3304	0	110	8-140	3458	4.58	0		

The following samples were analyzed in this batch:

1709440-01C	1709440-02C	1709440-03C
1709440-04C		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107211A** Instrument ID **VMS7** Method: **SW8260B**

MBLK		Sample ID: MBLK-107211-107211A				Units: µg/Kg-dry		Analysis Date: 9/11/2017 12:38 PM		
Client ID:		Run ID: VMS7_170911A				SeqNo: 4634851		Prep Date: 9/11/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U	28								
1,1,2,2-Tetrachloroethane	U	24								
1,1,2-Trichloroethane	U	30								
1,1-Dichloroethane	U	25								
1,1-Dichloroethene	U	27								
1,2,3-Trichlorobenzene	U	44								
1,2,4-Trichlorobenzene	U	74								
1,2-Dibromo-3-chloropropane	U	41								
1,2-Dibromoethane	U	33								
1,2-Dichlorobenzene	U	30								
1,2-Dichloroethane	U	27								
1,2-Dichloropropane	U	28								
1,3-Dichlorobenzene	U	32								
1,4-Dichlorobenzene	U	26								
2-Butanone	U	130								
2-Hexanone	U	66								
4-Methyl-2-pentanone	U	73								
Acetone	U	180								
Benzene	U	23								
Bromochloromethane	U	45								
Bromodichloromethane	U	27								
Bromoform	U	35								
Bromomethane	U	43								
Carbon disulfide	U	34								
Carbon tetrachloride	U	18								
Chlorobenzene	U	30								
Chloroethane	U	64								
Chloroform	U	34								
Chloromethane	U	40								
cis-1,2-Dichloroethene	U	28								
cis-1,3-Dichloropropene	U	38								
Cyclohexane	U	50								
Dibromochloromethane	U	23								
Dichlorodifluoromethane	U	44								
Ethylbenzene	U	23								
Isopropylbenzene	U	39								
m,p-Xylene	U	45								
Methyl tert-butyl ether	U	32								
Methylcyclohexane	U	43								
Methylene chloride	U	46								
o-Xylene	U	32								
Styrene	U	71								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: 107211A	Instrument ID VMS7	Method: SW8260B					
Tetrachloroethene	U	49					
Toluene	U	33					
trans-1,2-Dichloroethene	U	28					
trans-1,3-Dichloropropene	U	18					
Trichloroethene	U	27					
Trichlorofluoromethane	U	19					
Vinyl chloride	U	32					
Xylenes, Total	U	77					
<i>Surr: 1,2-Dichloroethane-d4</i>	951	0	1000	0	95.1	70-130	0
<i>Surr: 4-Bromofluorobenzene</i>	937	0	1000	0	93.7	70-130	0
<i>Surr: Dibromofluoromethane</i>	974	0	1000	0	97.4	70-130	0
<i>Surr: Toluene-d8</i>	969.5	0	1000	0	97	70-130	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107211A** Instrument ID **VMS7** Method: **SW8260B**

LCS		Sample ID: LCS-107211-107211A				Units: µg/Kg-dry		Analysis Date: 9/11/2017 11:14 AM		
Client ID:		Run ID: VMS7_170911A				SeqNo: 4634850		Prep Date: 9/11/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1026	28	1000	0	103	70-135	0			
1,1,2,2-Tetrachloroethane	904.5	24	1000	0	90.4	55-130	0			
1,1,2-Trichloroethane	911.5	30	1000	0	91.2	60-125	0			
1,1-Dichloroethane	965	25	1000	0	96.5	75-125	0			
1,1-Dichloroethene	1010	27	1000	0	101	65-135	0			
1,2,3-Trichlorobenzene	945.5	44	1000	0	94.6	60-135	0			
1,2,4-Trichlorobenzene	964	74	1000	0	96.4	65-130	0			
1,2-Dibromo-3-chloropropane	898.5	41	1000	0	89.8	40-135	0			
1,2-Dibromoethane	1004	33	1000	0	100	80-195	0			
1,2-Dichlorobenzene	882.5	30	1000	0	88.2	75-120	0			
1,2-Dichloroethane	874	27	1000	0	87.4	70-135	0			
1,2-Dichloropropane	905.5	28	1000	0	90.6	70-120	0			
1,3-Dichlorobenzene	914	32	1000	0	91.4	70-125	0			
1,4-Dichlorobenzene	884	26	1000	0	88.4	70-125	0			
2-Butanone	842.5	130	1000	0	84.2	30-160	0			
2-Hexanone	780.5	66	1000	0	78	45-145	0			
4-Methyl-2-pentanone	1042	73	1000	0	104	74-176	0			
Acetone	750	180	1000	0	75	20-160	0			
Benzene	932	23	1000	0	93.2	75-125	0			
Bromochloromethane	899	45	1000	0	89.9	74-134	0			
Bromodichloromethane	947.5	27	1000	0	94.8	70-130	0			
Bromoform	868	35	1000	0	86.8	55-135	0			
Bromomethane	821	43	1000	0	82.1	50-170	0			
Carbon disulfide	1064	34	1000	0	106	45-160	0			
Carbon tetrachloride	874	18	1000	0	87.4	65-135	0			
Chlorobenzene	925.5	30	1000	0	92.6	75-125	0			
Chloroethane	746	64	1000	0	74.6	40-155	0			
Chloroform	930	34	1000	0	93	70-125	0			
Chloromethane	571.5	40	1000	0	57.2	50-144	0			
cis-1,2-Dichloroethene	941	28	1000	0	94.1	65-125	0			
cis-1,3-Dichloropropene	907	38	1000	0	90.7	70-125	0			
Dibromochloromethane	765	23	1000	0	76.5	65-135	0			
Dichlorodifluoromethane	577	44	1000	0	57.7	35-135	0			
Ethylbenzene	910.5	23	1000	0	91	75-125	0			
Isopropylbenzene	977.5	39	1000	0	97.8	75-130	0			
m,p-Xylene	1839	45	2000	0	92	80-125	0			
Methyl tert-butyl ether	793.5	32	1000	0	79.4	75-125	0			
Methylene chloride	844.5	46	1000	0	84.4	55-145	0			
o-Xylene	941	32	1000	0	94.1	75-125	0			
Styrene	972.5	71	1000	0	97.2	80-138	0			
Tetrachloroethene	1049	49	1000	0	105	67-167	0			
Toluene	909.5	33	1000	0	91	70-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: 107211A	Instrument ID VMS7			Method: SW8260B			
trans-1,2-Dichloroethene	908.5	28	1000	0	90.8	65-135	0
trans-1,3-Dichloropropene	879.5	18	1000	0	88	59-129	0
Trichloroethene	974	27	1000	0	97.4	75-125	0
Trichlorofluoromethane	789	19	1000	0	78.9	25-185	0
Vinyl chloride	704	32	1000	0	70.4	60-125	0
Xylenes, Total	2780	77	3000	0	92.7	75-125	0
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>962.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>96.2</i>	<i>70-130</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>1040</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>104</i>	<i>70-130</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>1044</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>104</i>	<i>70-130</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>998</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>99.8</i>	<i>70-130</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107211A** Instrument ID **VMS7** Method: **SW8260B**

MS				Sample ID: 17081916-06A MS			Units: µg/Kg-dry		Analysis Date: 9/11/2017 08:02 PM	
Client ID:				Run ID: VMS7_170911A			SeqNo: 4634853		Prep Date: 9/11/2017	
							DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1620	44	1532	0	106	70-135	0			
1,1,2,2-Tetrachloroethane	553.7	37	1532	0	36.2	55-130	0			S
1,1,2-Trichloroethane	1469	46	1532	0	95.9	60-125	0			
1,1-Dichloroethane	1275	39	1532	0	83.2	75-125	0			
1,1-Dichloroethene	1650	41	1532	0	108	65-135	0			
1,2,3-Trichlorobenzene	1527	67	1532	0	99.7	60-135	0			
1,2,4-Trichlorobenzene	1584	110	1532	0	103	65-130	0			
1,2-Dibromo-3-chloropropane	1283	62	1532	0	83.8	40-135	0			
1,2-Dibromoethane	1639	51	1532	0	107	80-195	0			
1,2-Dichlorobenzene	1415	45	1532	0	92.4	75-120	0			
1,2-Dichloroethane	1379	42	1532	0	90	70-135	0			
1,2-Dichloropropane	1458	42	1532	0	95.2	70-120	0			
1,3-Dichlorobenzene	1434	49	1532	0	93.6	70-125	0			
1,4-Dichlorobenzene	1389	40	1532	0	90.7	70-125	0			
2-Butanone	2112	210	1532	0	138	30-160	0			
2-Hexanone	1749	100	1532	0	114	45-145	0			
4-Methyl-2-pentanone	1329	110	1532	0	86.8	74-176	0			
Acetone	2492	280	1532	0	163	20-160	0			S
Benzene	1505	35	1532	0	98.2	75-125	0			
Bromochloromethane	1294	68	1532	0	84.5	74-134	0			
Bromodichloromethane	1431	41	1532	0	93.4	70-130	0			
Bromoform	1230	54	1532	0	80.3	55-135	0			
Bromomethane	900.6	66	1532	0	58.8	50-170	0			
Carbon disulfide	1456	52	1532	0	95	45-160	0			
Carbon tetrachloride	1327	27	1532	0	86.6	65-135	0			
Chlorobenzene	1438	46	1532	0	93.9	75-125	0			
Chloroethane	886.8	98	1532	0	57.9	40-155	0			
Chloroform	1493	52	1532	0	97.4	70-125	0			
Chloromethane	793.4	62	1532	0	51.8	50-144	0			
cis-1,2-Dichloroethene	1441	43	1532	0	94.1	65-125	0			
cis-1,3-Dichloropropene	1339	59	1532	0	87.4	70-125	0			
Dibromochloromethane	1147	35	1532	0	74.9	65-135	0			
Dichlorodifluoromethane	899.1	68	1532	0	58.7	35-135	0			
Ethylbenzene	1457	36	1532	0	95.2	75-125	0			
Isopropylbenzene	1541	60	1532	0	101	75-130	0			
m,p-Xylene	2899	69	3063	0	94.6	80-125	0			
Methyl tert-butyl ether	1244	50	1532	0	81.2	75-125	0			
Methylene chloride	1299	70	1532	0	84.8	55-145	0			
o-Xylene	1493	50	1532	0	97.5	75-125	0			
Styrene	1552	110	1532	0	101	80-138	0			
Tetrachloroethene	3046	76	1532	0	199	67-167	0			S
Toluene	1443	51	1532	0	94.2	70-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: 107211A		Instrument ID VMS7		Method: SW8260B				
trans-1,2-Dichloroethene	1403	43	1532	0	91.6	65-135	0	
trans-1,3-Dichloropropene	1244	27	1532	0	81.2	59-129	0	
Trichloroethene	2243	41	1532	0	146	75-125	0	S
Trichlorofluoromethane	1230	29	1532	0	80.3	25-185	0	
Vinyl chloride	1106	49	1532	0	72.2	60-125	0	
Xylenes, Total	4393	120	4595	0	95.6	75-125	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	1473	0	1532	0	96.2	70-130	0	
<i>Surr: 4-Bromofluorobenzene</i>	1497	0	1532	0	97.8	70-130	0	
<i>Surr: Dibromofluoromethane</i>	1537	0	1532	0	100	70-130	0	
<i>Surr: Toluene-d8</i>	1495	0	1532	0	97.6	70-130	0	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **107211A** Instrument ID **VMS7** Method: **SW8260B**

MSD				Sample ID: 17081916-06A MSD			Units: µg/Kg-dry		Analysis Date: 9/11/2017 08:23 PM		
Client ID:		Run ID: VMS7_170911A			SeqNo: 4634854		Prep Date: 9/11/2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
1,1,1-Trichloroethane	1754	44	1532	0	114	70-135	1620	7.9	30	SR	
1,1,2,2-Tetrachloroethane	768.9	37	1532	0	50.2	55-130	553.7	32.5	30		
1,1,2-Trichloroethane	1566	46	1532	0	102	60-125	1469	6.41	30		
1,1-Dichloroethane	1571	39	1532	0	103	75-125	1275	20.8	30		
1,1-Dichloroethene	1720	41	1532	0	112	65-135	1650	4.14	30		
1,2,3-Trichlorobenzene	1786	67	1532	0	117	60-135	1527	15.6	30		
1,2,4-Trichlorobenzene	1712	110	1532	0	112	65-130	1584	7.81	30		
1,2-Dibromo-3-chloropropane	1473	62	1532	0	96.2	40-135	1283	13.8	30		
1,2-Dibromoethane	1757	51	1532	0	115	80-195	1639	6.95	30		
1,2-Dichlorobenzene	1545	45	1532	0	101	75-120	1415	8.79	30		
1,2-Dichloroethane	1497	42	1532	0	97.8	70-135	1379	8.2	30		
1,2-Dichloropropane	1567	42	1532	0	102	70-120	1458	7.19	30		
1,3-Dichlorobenzene	1575	49	1532	0	103	70-125	1434	9.36	30		
1,4-Dichlorobenzene	1522	40	1532	0	99.4	70-125	1389	9.1	30		
2-Butanone	2265	210	1532	0	148	30-160	2112	7	30		
2-Hexanone	1849	100	1532	0	121	45-145	1749	5.53	30		
4-Methyl-2-pentanone	1432	110	1532	0	93.5	74-176	1329	7.43	30	S	
Acetone	2620	280	1532	0	171	20-160	2492	5	30		
Benzene	1623	35	1532	0	106	75-125	1505	7.54	30		
Bromochloromethane	1406	68	1532	0	91.8	74-134	1294	8.28	30		
Bromodichloromethane	1564	41	1532	0	102	70-130	1431	8.85	30		
Bromoform	1354	54	1532	0	88.4	55-135	1230	9.6	30		
Bromomethane	755.1	66	1532	0	49.3	50-170	900.6	17.6	30		
Carbon disulfide	1545	52	1532	0	101	45-160	1456	5.97	30		
Carbon tetrachloride	1412	27	1532	0	92.2	65-135	1327	6.21	30		
Chlorobenzene	1568	46	1532	0	102	75-125	1438	8.61	30		
Chloroethane	1120	98	1532	0	73.1	40-155	886.8	23.2	30		
Chloroform	1598	52	1532	0	104	70-125	1493	6.84	30		
Chloromethane	861.6	62	1532	0	56.2	50-144	793.4	8.24	30		
cis-1,2-Dichloroethene	1511	43	1532	0	98.6	65-125	1441	4.72	30		
cis-1,3-Dichloropropene	1400	59	1532	0	91.4	70-125	1339	4.42	30		
Dibromochloromethane	1176	35	1532	0	76.8	65-135	1147	2.5	30		
Dichlorodifluoromethane	947.3	68	1532	0	61.8	35-135	899.1	5.23	30		
Ethylbenzene	1557	36	1532	0	102	75-125	1457	6.61	30		
Isopropylbenzene	1634	60	1532	0	107	75-130	1541	5.84	30		
m,p-Xylene	3063	69	3063	0	100	80-125	2899	5.5	30		
Methyl tert-butyl ether	1339	50	1532	0	87.4	75-125	1244	7.41	30		
Methylene chloride	1359	70	1532	0	88.7	55-145	1299	4.5	30		
o-Xylene	1568	50	1532	0	102	75-125	1493	4.9	30		
Styrene	1629	110	1532	0	106	80-138	1552	4.86	30		
Tetrachloroethene	3148	76	1532	0	206	67-167	3046	3.29	30	S	
Toluene	1544	51	1532	0	101	70-125	1443	6.77	30		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: 107211A	Instrument ID VMS7			Method: SW8260B					
trans-1,2-Dichloroethene	1493	43	1532	0	97.5	65-135	1403	6.24	30
trans-1,3-Dichloropropene	1306	27	1532	0	85.2	59-129	1244	4.8	30
Trichloroethene	2274	41	1532	0	148	75-125	2243	1.36	30 S
Trichlorofluoromethane	1302	29	1532	0	85	25-185	1230	5.69	30
Vinyl chloride	1143	49	1532	0	74.6	60-125	1106	3.27	30
Xylenes, Total	4632	120	4595	0	101	75-125	4393	5.3	30
Surr: 1,2-Dichloroethane-d4	1485	0	1532	0	97	70-130	1473	0.829	30
Surr: 4-Bromofluorobenzene	1522	0	1532	0	99.4	70-130	1497	1.67	30
Surr: Dibromofluoromethane	1561	0	1532	0	102	70-130	1537	1.53	30
Surr: Toluene-d8	1480	0	1532	0	96.6	70-130	1495	1.03	30

The following samples were analyzed in this batch:

1709440-01A	1709440-02A	1709440-03A
1709440-04A	1709440-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **R220128** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R220128				Units: % of sample		Analysis Date: 9/14/2017 06:30 PM		
Client ID:		Run ID: MOIST_170914E				SeqNo: 4640621		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.050

LCS		Sample ID: LCS-R220128				Units: % of sample		Analysis Date: 9/14/2017 06:30 PM		
Client ID:		Run ID: MOIST_170914E				SeqNo: 4640620		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 1709439-01B DUP				Units: % of sample		Analysis Date: 9/14/2017 06:30 PM		
Client ID:		Run ID: MOIST_170914E				SeqNo: 4640602		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 16.9 0.050 0 0 0 0-0 16.96 0.354 5

DUP		Sample ID: 1709440-02B DUP				Units: % of sample		Analysis Date: 9/14/2017 06:30 PM		
Client ID: RF-B-6 (12-13.5')		Run ID: MOIST_170914E				SeqNo: 4640606		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 13.31 0.050 0 0 0 0-0 13.26 0.376 5

The following samples were analyzed in this batch:

1709440-01B	1709440-02B	1709440-03B
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 1709440
Project: 21-41365B

QC BATCH REPORT

Batch ID: **R220171** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R220171				Units: % of sample		Analysis Date: 9/16/2017 04:45 PM		
Client ID:		Run ID: MOIST_170916B				SeqNo: 4641458		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.050

LCS		Sample ID: LCS-R220171				Units: % of sample		Analysis Date: 9/16/2017 04:45 PM		
Client ID:		Run ID: MOIST_170916B				SeqNo: 4641457		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 1709845-12B DUP				Units: % of sample		Analysis Date: 9/16/2017 04:45 PM		
Client ID:		Run ID: MOIST_170916B				SeqNo: 4641451		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 21.51 0.050 0 0 0 0-0 20.82 3.26 5

DUP		Sample ID: 1709845-15B DUP				Units: % of sample		Analysis Date: 9/16/2017 04:45 PM		
Client ID:		Run ID: MOIST_170916B				SeqNo: 4641455		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 19.3 0.050 0 0 0 0-0 19.86 2.86 5

The following samples were analyzed in this batch:

1709440-04B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 123456

☐ Cincinnati, OH
+1 513 733 5336

☐ Everett, WA
+1 425 356 2600

☐ Fort Collins, CO
+1 970 490 1511

☒ Holland, MI
+1 616 399 6070

☐ Houston, TX
+1 281 530 5656

☐ Middletown, PA
+1 717 944 5541

☐ Salt Lake City, UT
+1 801 266 7700

☐ Spring City, PA
+1 610 948 4903

☐ York, PA
+1 717 505 5280

1709440

Customer Information		Project Information		Parameter/Method Request for Analysis														
Purchase Order		Project Name		A	VOCs													
Work Order		Project Number	21-41365B	B	PAHs													
Company Name	Ramboll Environ	Bill To Company	Ramboll Environ	C	RCRA 8 metals													
Send Report To	Donna Volk	Invoice Attn.	Donna Volk	D														
Address	175 N. Corporate Dr. Ste. 1100	Address	175 N. Corporate Dr. Ste. 1100	F														
City/State/Zip	Brookfield, WI 53045	City/State/Zip	Brookfield, WI 53045	G	MP													
Phone	262-901-3504	Phone	262-901-3504	H														
Fax	262-901-0079	Fax	262-901-0079	I														
e-Mail Address	dvolk@ramboll.com	e-Mail Address	dvolk@ramboll.com	J														
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold	
1	RF-B-6 (2-3.5' FILL)	9/6/12	0925	S	7/none	4	X	X	X									
2	RF-B-6 (12-13.5')	9/6/12	0949	S	7/none	4	X	X	X									
3	RF-B-6A (2-3.5' FILL)	9/6/12	1217	S	7/none	4	X	X	X									
4	RF-B-6A (9.5-11')	9/6/12	1230	S	7/none	4	X	X	X									
5	TRIP BLANK	9/6/12	—	—	—	1	X											
6	TEMP BLANK	9/6/12	—	—	—	1												
7																		
8																		
9																		
10																		

Sampler(s): Please Print & Sign		Shipment Method:		Required Turnaround Time:		Results Due Date:	
 Michelle Peters				<input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour			
Relinquished by:	Date:	Time:	Received by:	Notes:			
 Michelle Peters	9/6/12	3:00 PM	FED EX				
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler Temp.	QC Package: (Check Box Below)		
 Michelle Peters	9/8/12	1530	 Michelle Peters	5022 364	<input checked="" type="checkbox"/> Level II: Standard QC <input type="checkbox"/> Level III: Std QC + Raw Data <input type="checkbox"/> Level IV: SW846 CLP-Like		
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	Other:			
DES	9/8/12	1700	 Michelle Peters				

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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Sample Receipt Checklist

Client Name: **ENVIRONINT - WI**

Date/Time Received: **08-Sep-17 15:30**

Work Order: **1709440**

Received by: **DS**

Checklist completed by Diane Shaw
eSignature

08-Sep-17
Date

Reviewed by: Chad Whelton
eSignature

11-Sep-17
Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>3.6/3.6 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>9/8/2017 5:32:37 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

May 04, 2018

Donna Volk
Ramboll Environ
175 N. Corporate Dr.
Suite 160
Brookfield, WI 53045

RE: Project: 1690004946 WWV-SITE 12.51
Pace Project No.: 40168265

Dear Donna Volk:

Enclosed are the analytical results for sample(s) received by the laboratory on April 21, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Steven Mleczko
steve.mleczko@pacelabs.com
(920)469-2436
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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CERTIFICATIONS

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40167855012	PP-B-1 (2-3')	Solid	04/19/18 12:55	04/21/18 10:20
40167855013	PP-B-1 (4-5')	Solid	04/19/18 13:00	04/21/18 10:20
40167855014	PP-B-2 (2-3')	Solid	04/19/18 12:35	04/21/18 10:20
40167855015	PP-B-2 (4-5')	Solid	04/19/18 12:40	04/21/18 10:20
40167855016	PP-B-3 (2-3')	Solid	04/19/18 13:15	04/21/18 10:20
40167855017	PP-B-3 (4-5')	Solid	04/19/18 13:20	04/21/18 10:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40167855012	PP-B-1 (2-3')	EPA 8270 by SIM	ARO	20
		ASTM D2974-87	TEL	1
40167855013	PP-B-1 (4-5')	EPA 8270 by SIM	ARO	20
		ASTM D2974-87	TEL	1
40167855014	PP-B-2 (2-3')	EPA 8270 by SIM	ARO	20
		ASTM D2974-87	TEL	1
40167855015	PP-B-2 (4-5')	EPA 8270 by SIM	ARO	20
		ASTM D2974-87	TEL	1
40167855016	PP-B-3 (2-3')	EPA 8270 by SIM	ARO	20
		ASTM D2974-87	TEL	1
40167855017	PP-B-3 (4-5')	EPA 8270 by SIM	ARO	20
		ASTM D2974-87	TEL	1

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 1690004946 WWV-SITE 12.51
Pace Project No.: 40168265

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40167855012	PP-B-1 (2-3')					
EPA 8270 by SIM	Acenaphthene	41.3J	ug/kg	117	04/27/18 14:09	
EPA 8270 by SIM	Acenaphthylene	939	ug/kg	100	04/27/18 14:09	
EPA 8270 by SIM	Anthracene	898	ug/kg	173	04/27/18 14:09	
EPA 8270 by SIM	Benzo(a)anthracene	1530	ug/kg	96.4	04/27/18 14:09	
EPA 8270 by SIM	Benzo(a)pyrene	2080	ug/kg	76.1	04/27/18 14:09	
EPA 8270 by SIM	Benzo(b)fluoranthene	1620	ug/kg	85.6	04/27/18 14:09	
EPA 8270 by SIM	Benzo(g,h,i)perylene	898	ug/kg	61.6	04/27/18 14:09	
EPA 8270 by SIM	Benzo(k)fluoranthene	1980	ug/kg	76.0	04/27/18 14:09	
EPA 8270 by SIM	Chrysene	1940	ug/kg	102	04/27/18 14:09	L1
EPA 8270 by SIM	Dibenz(a,h)anthracene	476	ug/kg	67.8	04/27/18 14:09	
EPA 8270 by SIM	Fluoranthene	2280	ug/kg	158	04/27/18 14:09	
EPA 8270 by SIM	Fluorene	125J	ug/kg	125	04/27/18 14:09	
EPA 8270 by SIM	Indeno(1,2,3-cd)pyrene	967	ug/kg	66.7	04/27/18 14:09	
EPA 8270 by SIM	2-Methylnaphthalene	57.9J	ug/kg	152	04/27/18 14:09	
EPA 8270 by SIM	Naphthalene	160J	ug/kg	256	04/27/18 14:09	
EPA 8270 by SIM	Phenanthrene	850	ug/kg	353	04/27/18 14:09	
EPA 8270 by SIM	Pyrene	2470	ug/kg	136	04/27/18 14:09	
ASTM D2974-87	Percent Moisture	12.1	%	0.10	04/30/18 15:45	
40167855013	PP-B-1 (4-5')					
EPA 8270 by SIM	Acenaphthylene	7.9J	ug/kg	12.3	04/26/18 20:14	
EPA 8270 by SIM	Benzo(a)anthracene	23.9	ug/kg	11.9	04/26/18 20:14	
EPA 8270 by SIM	Benzo(a)pyrene	23.1	ug/kg	9.4	04/26/18 20:14	
EPA 8270 by SIM	Benzo(b)fluoranthene	25.8	ug/kg	10.5	04/26/18 20:14	
EPA 8270 by SIM	Benzo(g,h,i)perylene	13.9	ug/kg	7.6	04/26/18 20:14	B
EPA 8270 by SIM	Benzo(k)fluoranthene	27.6	ug/kg	9.4	04/26/18 20:14	
EPA 8270 by SIM	Chrysene	42.1	ug/kg	12.6	04/26/18 20:14	L1
EPA 8270 by SIM	Dibenz(a,h)anthracene	5.2J	ug/kg	8.3	04/26/18 20:14	B
EPA 8270 by SIM	Fluoranthene	48.6	ug/kg	19.5	04/26/18 20:14	
EPA 8270 by SIM	Indeno(1,2,3-cd)pyrene	13.4	ug/kg	8.2	04/26/18 20:14	B
EPA 8270 by SIM	Phenanthrene	18.6J	ug/kg	43.5	04/26/18 20:14	
EPA 8270 by SIM	Pyrene	36.6	ug/kg	16.8	04/26/18 20:14	
ASTM D2974-87	Percent Moisture	10.7	%	0.10	04/30/18 15:45	
40167855014	PP-B-2 (2-3')					
EPA 8270 by SIM	Acenaphthene	6.0J	ug/kg	15.9	05/03/18 16:42	
EPA 8270 by SIM	Acenaphthylene	396	ug/kg	13.6	05/03/18 16:42	
EPA 8270 by SIM	Anthracene	297	ug/kg	23.5	05/03/18 16:42	
EPA 8270 by SIM	Benzo(a)anthracene	608	ug/kg	13.1	05/03/18 16:42	
EPA 8270 by SIM	Benzo(a)pyrene	727	ug/kg	10.3	05/03/18 16:42	
EPA 8270 by SIM	Benzo(b)fluoranthene	995	ug/kg	11.6	05/03/18 16:42	
EPA 8270 by SIM	Benzo(g,h,i)perylene	386	ug/kg	8.4	05/03/18 16:42	
EPA 8270 by SIM	Benzo(k)fluoranthene	287	ug/kg	10.3	05/03/18 16:42	
EPA 8270 by SIM	Chrysene	605	ug/kg	13.8	05/03/18 16:42	
EPA 8270 by SIM	Dibenz(a,h)anthracene	94.2	ug/kg	9.2	05/03/18 16:42	
EPA 8270 by SIM	Fluoranthene	367	ug/kg	21.5	05/03/18 16:42	
EPA 8270 by SIM	Fluorene	17.4	ug/kg	17.1	05/03/18 16:42	
EPA 8270 by SIM	Indeno(1,2,3-cd)pyrene	258	ug/kg	9.1	05/03/18 16:42	

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40167855014	PP-B-2 (2-3')					
EPA 8270 by SIM	Phenanthrene	120	ug/kg	47.9	05/03/18 16:42	
EPA 8270 by SIM	Pyrene	536	ug/kg	18.5	05/03/18 16:42	
ASTM D2974-87	Percent Moisture	19.2	%	0.10	04/30/18 15:45	
40167855015	PP-B-2 (4-5')					
EPA 8270 by SIM	Benzo(a)pyrene	4.0J	ug/kg	9.2	05/03/18 12:23	
EPA 8270 by SIM	Benzo(b)fluoranthene	5.0J	ug/kg	10.4	05/03/18 12:23	
EPA 8270 by SIM	Benzo(g,h,i)perylene	3.0J	ug/kg	7.5	05/03/18 12:23	
EPA 8270 by SIM	Indeno(1,2,3-cd)pyrene	2.7J	ug/kg	8.1	05/03/18 12:23	
ASTM D2974-87	Percent Moisture	9.4	%	0.10	04/30/18 15:45	
40167855016	PP-B-3 (2-3')					
EPA 8270 by SIM	Acenaphthylene	29.6	ug/kg	13.0	05/03/18 18:07	
EPA 8270 by SIM	Anthracene	33.3	ug/kg	22.5	05/03/18 18:07	
EPA 8270 by SIM	Benzo(a)anthracene	71.7	ug/kg	12.6	05/03/18 18:07	
EPA 8270 by SIM	Benzo(a)pyrene	68.5	ug/kg	9.9	05/03/18 18:07	
EPA 8270 by SIM	Benzo(b)fluoranthene	115	ug/kg	11.2	05/03/18 18:07	
EPA 8270 by SIM	Benzo(g,h,i)perylene	36.8	ug/kg	8.0	05/03/18 18:07	
EPA 8270 by SIM	Benzo(k)fluoranthene	47.4	ug/kg	9.9	05/03/18 18:07	
EPA 8270 by SIM	Chrysene	84.4	ug/kg	13.3	05/03/18 18:07	
EPA 8270 by SIM	Dibenz(a,h)anthracene	10.3	ug/kg	8.8	05/03/18 18:07	
EPA 8270 by SIM	Fluoranthene	87.7	ug/kg	20.6	05/03/18 18:07	
EPA 8270 by SIM	Indeno(1,2,3-cd)pyrene	27.9	ug/kg	8.7	05/03/18 18:07	
EPA 8270 by SIM	Phenanthrene	70.3	ug/kg	46.0	05/03/18 18:07	
EPA 8270 by SIM	Pyrene	106	ug/kg	17.8	05/03/18 18:07	
ASTM D2974-87	Percent Moisture	15.6	%	0.10	04/30/18 15:45	
40167855017	PP-B-3 (4-5')					
EPA 8270 by SIM	Benzo(a)pyrene	4.4J	ug/kg	10.6	05/03/18 12:40	
EPA 8270 by SIM	Benzo(b)fluoranthene	6.0J	ug/kg	11.9	05/03/18 12:40	
EPA 8270 by SIM	Benzo(g,h,i)perylene	3.1J	ug/kg	8.6	05/03/18 12:40	
EPA 8270 by SIM	Indeno(1,2,3-cd)pyrene	2.9J	ug/kg	9.3	05/03/18 12:40	
ASTM D2974-87	Percent Moisture	21.0	%	0.10	04/30/18 15:45	

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

Sample: PP-B-1 (2-3') **Lab ID: 40167855012** Collected: 04/19/18 12:55 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546									
Acenaphthene	41.3J	ug/kg	117	35.3	4	04/26/18 09:25	04/27/18 14:09	83-32-9	
Acenaphthylene	939	ug/kg	100	30.0	4	04/26/18 09:25	04/27/18 14:09	208-96-8	
Anthracene	898	ug/kg	173	51.9	4	04/26/18 09:25	04/27/18 14:09	120-12-7	
Benzo(a)anthracene	1530	ug/kg	96.4	28.8	4	04/26/18 09:25	04/27/18 14:09	56-55-3	
Benzo(a)pyrene	2080	ug/kg	76.1	22.8	4	04/26/18 09:25	04/27/18 14:09	50-32-8	
Benzo(b)fluoranthene	1620	ug/kg	85.6	25.7	4	04/26/18 09:25	04/27/18 14:09	205-99-2	
Benzo(g,h,i)perylene	898	ug/kg	61.6	18.5	4	04/26/18 09:25	04/27/18 14:09	191-24-2	
Benzo(k)fluoranthene	1980	ug/kg	76.0	22.8	4	04/26/18 09:25	04/27/18 14:09	207-08-9	
Chrysene	1940	ug/kg	102	30.7	4	04/26/18 09:25	04/27/18 14:09	218-01-9	L1
Dibenz(a,h)anthracene	476	ug/kg	67.8	20.3	4	04/26/18 09:25	04/27/18 14:09	53-70-3	
Fluoranthene	2280	ug/kg	158	47.4	4	04/26/18 09:25	04/27/18 14:09	206-44-0	
Fluorene	125J	ug/kg	125	37.6	4	04/26/18 09:25	04/27/18 14:09	86-73-7	
Indeno(1,2,3-cd)pyrene	967	ug/kg	66.7	20.0	4	04/26/18 09:25	04/27/18 14:09	193-39-5	
1-Methylnaphthalene	<36.6	ug/kg	122	36.6	4	04/26/18 09:25	04/27/18 14:09	90-12-0	
2-Methylnaphthalene	57.9J	ug/kg	152	45.5	4	04/26/18 09:25	04/27/18 14:09	91-57-6	
Naphthalene	160J	ug/kg	256	76.6	4	04/26/18 09:25	04/27/18 14:09	91-20-3	
Phenanthrene	850	ug/kg	353	106	4	04/26/18 09:25	04/27/18 14:09	85-01-8	
Pyrene	2470	ug/kg	136	41.0	4	04/26/18 09:25	04/27/18 14:09	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	69	%	10-115		4	04/26/18 09:25	04/27/18 14:09	321-60-8	
Terphenyl-d14 (S)	94	%	10-121		4	04/26/18 09:25	04/27/18 14:09	1718-51-0	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	12.1	%	0.10	0.10	1		04/30/18 15:45		

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

Sample: PP-B-1 (4-5') Lab ID: 40167855013 Collected: 04/19/18 13:00 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546									
Acenaphthene	<4.3	ug/kg	14.5	4.3	1	04/26/18 09:25	04/26/18 20:14	83-32-9	
Acenaphthylene	7.9J	ug/kg	12.3	3.7	1	04/26/18 09:25	04/26/18 20:14	208-96-8	
Anthracene	<6.4	ug/kg	21.3	6.4	1	04/26/18 09:25	04/26/18 20:14	120-12-7	
Benzo(a)anthracene	23.9	ug/kg	11.9	3.6	1	04/26/18 09:25	04/26/18 20:14	56-55-3	
Benzo(a)pyrene	23.1	ug/kg	9.4	2.8	1	04/26/18 09:25	04/26/18 20:14	50-32-8	
Benzo(b)fluoranthene	25.8	ug/kg	10.5	3.2	1	04/26/18 09:25	04/26/18 20:14	205-99-2	
Benzo(g,h,i)perylene	13.9	ug/kg	7.6	2.3	1	04/26/18 09:25	04/26/18 20:14	191-24-2	B
Benzo(k)fluoranthene	27.6	ug/kg	9.4	2.8	1	04/26/18 09:25	04/26/18 20:14	207-08-9	
Chrysene	42.1	ug/kg	12.6	3.8	1	04/26/18 09:25	04/26/18 20:14	218-01-9	L1
Dibenz(a,h)anthracene	5.2J	ug/kg	8.3	2.5	1	04/26/18 09:25	04/26/18 20:14	53-70-3	B
Fluoranthene	48.6	ug/kg	19.5	5.8	1	04/26/18 09:25	04/26/18 20:14	206-44-0	
Fluorene	<4.6	ug/kg	15.5	4.6	1	04/26/18 09:25	04/26/18 20:14	86-73-7	
Indeno(1,2,3-cd)pyrene	13.4	ug/kg	8.2	2.5	1	04/26/18 09:25	04/26/18 20:14	193-39-5	B
1-Methylnaphthalene	<4.5	ug/kg	15.0	4.5	1	04/26/18 09:25	04/26/18 20:14	90-12-0	
2-Methylnaphthalene	<5.6	ug/kg	18.7	5.6	1	04/26/18 09:25	04/26/18 20:14	91-57-6	
Naphthalene	<9.4	ug/kg	31.5	9.4	1	04/26/18 09:25	04/26/18 20:14	91-20-3	
Phenanthrene	18.6J	ug/kg	43.5	13.1	1	04/26/18 09:25	04/26/18 20:14	85-01-8	
Pyrene	36.6	ug/kg	16.8	5.1	1	04/26/18 09:25	04/26/18 20:14	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	51	%	10-115		1	04/26/18 09:25	04/26/18 20:14	321-60-8	
Terphenyl-d14 (S)	70	%	10-121		1	04/26/18 09:25	04/26/18 20:14	1718-51-0	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	10.7	%	0.10	0.10	1		04/30/18 15:45		

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

Sample: PP-B-2 (2-3') **Lab ID: 40167855014** Collected: 04/19/18 12:35 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM									
Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546									
Acenaphthene	6.0J	ug/kg	15.9	4.8	1	05/01/18 09:35	05/03/18 16:42	83-32-9	
Acenaphthylene	396	ug/kg	13.6	4.1	1	05/01/18 09:35	05/03/18 16:42	208-96-8	
Anthracene	297	ug/kg	23.5	7.1	1	05/01/18 09:35	05/03/18 16:42	120-12-7	
Benzo(a)anthracene	608	ug/kg	13.1	3.9	1	05/01/18 09:35	05/03/18 16:42	56-55-3	
Benzo(a)pyrene	727	ug/kg	10.3	3.1	1	05/01/18 09:35	05/03/18 16:42	50-32-8	
Benzo(b)fluoranthene	995	ug/kg	11.6	3.5	1	05/01/18 09:35	05/03/18 16:42	205-99-2	
Benzo(g,h,i)perylene	386	ug/kg	8.4	2.5	1	05/01/18 09:35	05/03/18 16:42	191-24-2	
Benzo(k)fluoranthene	287	ug/kg	10.3	3.1	1	05/01/18 09:35	05/03/18 16:42	207-08-9	
Chrysene	605	ug/kg	13.8	4.2	1	05/01/18 09:35	05/03/18 16:42	218-01-9	
Dibenz(a,h)anthracene	94.2	ug/kg	9.2	2.8	1	05/01/18 09:35	05/03/18 16:42	53-70-3	
Fluoranthene	367	ug/kg	21.5	6.4	1	05/01/18 09:35	05/03/18 16:42	206-44-0	
Fluorene	17.4	ug/kg	17.1	5.1	1	05/01/18 09:35	05/03/18 16:42	86-73-7	
Indeno(1,2,3-cd)pyrene	258	ug/kg	9.1	2.7	1	05/01/18 09:35	05/03/18 16:42	193-39-5	
1-Methylnaphthalene	<5.0	ug/kg	16.6	5.0	1	05/01/18 09:35	05/03/18 16:42	90-12-0	
2-Methylnaphthalene	<6.2	ug/kg	20.6	6.2	1	05/01/18 09:35	05/03/18 16:42	91-57-6	
Naphthalene	<10.4	ug/kg	34.7	10.4	1	05/01/18 09:35	05/03/18 16:42	91-20-3	
Phenanthrene	120	ug/kg	47.9	14.4	1	05/01/18 09:35	05/03/18 16:42	85-01-8	
Pyrene	536	ug/kg	18.5	5.6	1	05/01/18 09:35	05/03/18 16:42	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	57	%	10-115		1	05/01/18 09:35	05/03/18 16:42	321-60-8	
Terphenyl-d14 (S)	68	%	10-121		1	05/01/18 09:35	05/03/18 16:42	1718-51-0	
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	19.2	%	0.10	0.10	1		04/30/18 15:45		

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

Sample: PP-B-2 (4-5') Lab ID: 40167855015 Collected: 04/19/18 12:40 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546									
Acenaphthene	<4.3	ug/kg	14.2	4.3	1	05/01/18 09:35	05/03/18 12:23	83-32-9	
Acenaphthylene	<3.6	ug/kg	12.1	3.6	1	05/01/18 09:35	05/03/18 12:23	208-96-8	
Anthracene	<6.3	ug/kg	21.0	6.3	1	05/01/18 09:35	05/03/18 12:23	120-12-7	
Benzo(a)anthracene	<3.5	ug/kg	11.7	3.5	1	05/01/18 09:35	05/03/18 12:23	56-55-3	
Benzo(a)pyrene	4.0J	ug/kg	9.2	2.8	1	05/01/18 09:35	05/03/18 12:23	50-32-8	
Benzo(b)fluoranthene	5.0J	ug/kg	10.4	3.1	1	05/01/18 09:35	05/03/18 12:23	205-99-2	
Benzo(g,h,i)perylene	3.0J	ug/kg	7.5	2.2	1	05/01/18 09:35	05/03/18 12:23	191-24-2	
Benzo(k)fluoranthene	<2.8	ug/kg	9.2	2.8	1	05/01/18 09:35	05/03/18 12:23	207-08-9	
Chrysene	<3.7	ug/kg	12.4	3.7	1	05/01/18 09:35	05/03/18 12:23	218-01-9	
Dibenz(a,h)anthracene	<2.5	ug/kg	8.2	2.5	1	05/01/18 09:35	05/03/18 12:23	53-70-3	
Fluoranthene	<5.7	ug/kg	19.2	5.7	1	05/01/18 09:35	05/03/18 12:23	206-44-0	
Fluorene	<4.6	ug/kg	15.2	4.6	1	05/01/18 09:35	05/03/18 12:23	86-73-7	
Indeno(1,2,3-cd)pyrene	2.7J	ug/kg	8.1	2.4	1	05/01/18 09:35	05/03/18 12:23	193-39-5	
1-Methylnaphthalene	<4.4	ug/kg	14.8	4.4	1	05/01/18 09:35	05/03/18 12:23	90-12-0	
2-Methylnaphthalene	<5.5	ug/kg	18.4	5.5	1	05/01/18 09:35	05/03/18 12:23	91-57-6	
Naphthalene	<9.3	ug/kg	31.0	9.3	1	05/01/18 09:35	05/03/18 12:23	91-20-3	
Phenanthrene	<12.9	ug/kg	42.8	12.9	1	05/01/18 09:35	05/03/18 12:23	85-01-8	
Pyrene	<5.0	ug/kg	16.6	5.0	1	05/01/18 09:35	05/03/18 12:23	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	52	%	10-115		1	05/01/18 09:35	05/03/18 12:23	321-60-8	
Terphenyl-d14 (S)	72	%	10-121		1	05/01/18 09:35	05/03/18 12:23	1718-51-0	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	9.4	%	0.10	0.10	1		04/30/18 15:45		

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

Sample: PP-B-3 (2-3') **Lab ID: 40167855016** Collected: 04/19/18 13:15 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM									
Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546									
Acenaphthene	<4.6	ug/kg	15.3	4.6	1	05/01/18 09:35	05/03/18 18:07	83-32-9	
Acenaphthylene	29.6	ug/kg	13.0	3.9	1	05/01/18 09:35	05/03/18 18:07	208-96-8	
Anthracene	33.3	ug/kg	22.5	6.8	1	05/01/18 09:35	05/03/18 18:07	120-12-7	
Benzo(a)anthracene	71.7	ug/kg	12.6	3.8	1	05/01/18 09:35	05/03/18 18:07	56-55-3	
Benzo(a)pyrene	68.5	ug/kg	9.9	3.0	1	05/01/18 09:35	05/03/18 18:07	50-32-8	
Benzo(b)fluoranthene	115	ug/kg	11.2	3.3	1	05/01/18 09:35	05/03/18 18:07	205-99-2	
Benzo(g,h,i)perylene	36.8	ug/kg	8.0	2.4	1	05/01/18 09:35	05/03/18 18:07	191-24-2	
Benzo(k)fluoranthene	47.4	ug/kg	9.9	3.0	1	05/01/18 09:35	05/03/18 18:07	207-08-9	
Chrysene	84.4	ug/kg	13.3	4.0	1	05/01/18 09:35	05/03/18 18:07	218-01-9	
Dibenz(a,h)anthracene	10.3	ug/kg	8.8	2.7	1	05/01/18 09:35	05/03/18 18:07	53-70-3	
Fluoranthene	87.7	ug/kg	20.6	6.2	1	05/01/18 09:35	05/03/18 18:07	206-44-0	
Fluorene	<4.9	ug/kg	16.4	4.9	1	05/01/18 09:35	05/03/18 18:07	86-73-7	
Indeno(1,2,3-cd)pyrene	27.9	ug/kg	8.7	2.6	1	05/01/18 09:35	05/03/18 18:07	193-39-5	
1-Methylnaphthalene	<4.8	ug/kg	15.9	4.8	1	05/01/18 09:35	05/03/18 18:07	90-12-0	
2-Methylnaphthalene	<5.9	ug/kg	19.8	5.9	1	05/01/18 09:35	05/03/18 18:07	91-57-6	
Naphthalene	<10	ug/kg	33.3	10	1	05/01/18 09:35	05/03/18 18:07	91-20-3	
Phenanthrene	70.3	ug/kg	46.0	13.8	1	05/01/18 09:35	05/03/18 18:07	85-01-8	
Pyrene	106	ug/kg	17.8	5.4	1	05/01/18 09:35	05/03/18 18:07	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	64	%	10-115		1	05/01/18 09:35	05/03/18 18:07	321-60-8	
Terphenyl-d14 (S)	74	%	10-121		1	05/01/18 09:35	05/03/18 18:07	1718-51-0	
Percent Moisture									
Analytical Method: ASTM D2974-87									
Percent Moisture	15.6	%	0.10	0.10	1		04/30/18 15:45		

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

Sample: PP-B-3 (4-5') Lab ID: 40167855017 Collected: 04/19/18 13:20 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH by SIM Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546									
Acenaphthene	<4.9	ug/kg	16.3	4.9	1	05/01/18 09:35	05/03/18 12:40	83-32-9	
Acenaphthylene	<4.2	ug/kg	13.9	4.2	1	05/01/18 09:35	05/03/18 12:40	208-96-8	
Anthracene	<7.2	ug/kg	24.0	7.2	1	05/01/18 09:35	05/03/18 12:40	120-12-7	
Benzo(a)anthracene	<4.0	ug/kg	13.4	4.0	1	05/01/18 09:35	05/03/18 12:40	56-55-3	
Benzo(a)pyrene	4.4J	ug/kg	10.6	3.2	1	05/01/18 09:35	05/03/18 12:40	50-32-8	
Benzo(b)fluoranthene	6.0J	ug/kg	11.9	3.6	1	05/01/18 09:35	05/03/18 12:40	205-99-2	
Benzo(g,h,i)perylene	3.1J	ug/kg	8.6	2.6	1	05/01/18 09:35	05/03/18 12:40	191-24-2	
Benzo(k)fluoranthene	<3.2	ug/kg	10.6	3.2	1	05/01/18 09:35	05/03/18 12:40	207-08-9	
Chrysene	<4.3	ug/kg	14.2	4.3	1	05/01/18 09:35	05/03/18 12:40	218-01-9	
Dibenz(a,h)anthracene	<2.8	ug/kg	9.4	2.8	1	05/01/18 09:35	05/03/18 12:40	53-70-3	
Fluoranthene	<6.6	ug/kg	22.0	6.6	1	05/01/18 09:35	05/03/18 12:40	206-44-0	
Fluorene	<5.2	ug/kg	17.4	5.2	1	05/01/18 09:35	05/03/18 12:40	86-73-7	
Indeno(1,2,3-cd)pyrene	2.9J	ug/kg	9.3	2.8	1	05/01/18 09:35	05/03/18 12:40	193-39-5	
1-Methylnaphthalene	<5.1	ug/kg	16.9	5.1	1	05/01/18 09:35	05/03/18 12:40	90-12-0	
2-Methylnaphthalene	<6.3	ug/kg	21.1	6.3	1	05/01/18 09:35	05/03/18 12:40	91-57-6	
Naphthalene	<10.6	ug/kg	35.5	10.6	1	05/01/18 09:35	05/03/18 12:40	91-20-3	
Phenanthrene	<14.7	ug/kg	49.0	14.7	1	05/01/18 09:35	05/03/18 12:40	85-01-8	
Pyrene	<5.7	ug/kg	19.0	5.7	1	05/01/18 09:35	05/03/18 12:40	129-00-0	
Surrogates									
2-Fluorobiphenyl (S)	37	%	10-115		1	05/01/18 09:35	05/03/18 12:40	321-60-8	
Terphenyl-d14 (S)	56	%	10-121		1	05/01/18 09:35	05/03/18 12:40	1718-51-0	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	21.0	%	0.10	0.10	1		04/30/18 15:45		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

QC Batch:	287065	Analysis Method:	EPA 8270 by SIM
QC Batch Method:	EPA 3546	Analysis Description:	8270/3546 MSSV PAH by SIM
Associated Lab Samples:	40167855012, 40167855013		

METHOD BLANK: 1679124 Matrix: Solid

Associated Lab Samples: 40167855012, 40167855013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	<4.0	13.4	04/26/18 15:00	
2-Methylnaphthalene	ug/kg	<5.0	16.7	04/26/18 15:00	
Acenaphthene	ug/kg	<3.9	12.9	04/26/18 15:00	
Acenaphthylene	ug/kg	<3.3	11.0	04/26/18 15:00	
Anthracene	ug/kg	<5.7	19.0	04/26/18 15:00	
Benzo(a)anthracene	ug/kg	<3.2	10.6	04/26/18 15:00	
Benzo(a)pyrene	ug/kg	<2.5	8.4	04/26/18 15:00	
Benzo(b)fluoranthene	ug/kg	<2.8	9.4	04/26/18 15:00	
Benzo(g,h,i)perylene	ug/kg	3.2J	6.8	04/26/18 15:00	
Benzo(k)fluoranthene	ug/kg	<2.5	8.4	04/26/18 15:00	
Chrysene	ug/kg	<3.4	11.2	04/26/18 15:00	
Dibenz(a,h)anthracene	ug/kg	2.9J	7.5	04/26/18 15:00	
Fluoranthene	ug/kg	<5.2	17.4	04/26/18 15:00	
Fluorene	ug/kg	<4.1	13.8	04/26/18 15:00	
Indeno(1,2,3-cd)pyrene	ug/kg	2.6J	7.3	04/26/18 15:00	
Naphthalene	ug/kg	<8.4	28.1	04/26/18 15:00	
Phenanthrene	ug/kg	<11.7	38.8	04/26/18 15:00	
Pyrene	ug/kg	<4.5	15.0	04/26/18 15:00	
2-Fluorobiphenyl (S)	%	58	10-115	04/26/18 15:00	
Terphenyl-d14 (S)	%	97	10-121	04/26/18 15:00	

LABORATORY CONTROL SAMPLE: 1679125

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	333	243	73	48-99	
2-Methylnaphthalene	ug/kg	333	221	66	47-91	
Acenaphthene	ug/kg	333	259	78	53-98	
Acenaphthylene	ug/kg	333	228	69	52-96	
Anthracene	ug/kg	333	328	98	55-105	
Benzo(a)anthracene	ug/kg	333	252	76	55-98	
Benzo(a)pyrene	ug/kg	333	249	75	57-100	
Benzo(b)fluoranthene	ug/kg	333	232	70	57-103	
Benzo(g,h,i)perylene	ug/kg	333	266	80	39-103	
Benzo(k)fluoranthene	ug/kg	333	297	89	53-111	
Chrysene	ug/kg	333	345	104	55-102	L 1
Dibenz(a,h)anthracene	ug/kg	333	257	77	47-97	
Fluoranthene	ug/kg	333	321	96	51-118	
Fluorene	ug/kg	333	260	78	55-99	
Indeno(1,2,3-cd)pyrene	ug/kg	333	269	81	47-108	
Naphthalene	ug/kg	333	234	70	48-95	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

LABORATORY CONTROL SAMPLE: 1679125

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenanthrene	ug/kg	333	255	77	55-105	
Pyrene	ug/kg	333	280	84	58-106	
2-Fluorobiphenyl (S)	%			69	10-115	
Terphenyl-d14 (S)	%			93	10-121	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1679126 1679127

Parameter	Units	40167700001	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits			
1-Methylnaphthalene	ug/kg	10.5J	358	358	257	254	69	68	41-99	1	30	
2-Methylnaphthalene	ug/kg	12.1J	358	358	229	225	61	59	41-91	2	27	
Acenaphthene	ug/kg	<4.2	358	358	233	230	64	64	46-98	1	25	
Acenaphthylene	ug/kg	11.8J	358	358	241	214	64	56	43-96	12	26	
Anthracene	ug/kg	28.5	358	358	287	264	72	66	44-105	8	29	
Benzo(a)anthracene	ug/kg	86.6	358	358	291	248	57	45	39-98	16	29	
Benzo(a)pyrene	ug/kg	134	358	358	332	284	55	42	38-100	16	35	
Benzo(b)fluoranthene	ug/kg	93.4	358	358	319	240	63	41	32-105	28	34	
Benzo(g,h,i)perylene	ug/kg	129	358	358	244	203	32	21	12-103	18	35	
Benzo(k)fluoranthene	ug/kg	63.3	358	358	321	318	72	71	30-115	1	37	
Chrysene	ug/kg	173	358	358	379	335	58	45	46-102	12	27 M0	
Dibenz(a,h)anthracene	ug/kg	34.2	358	358	226	209	54	49	32-97	8	35	
Fluoranthene	ug/kg	166	358	358	412	336	69	47	32-118	20	37	
Fluorene	ug/kg	4.5J	358	358	230	223	63	61	44-99	3	28	
Indeno(1,2,3-cd)pyrene	ug/kg	52.8	358	358	243	215	53	45	20-111	12	33	
Naphthalene	ug/kg	12.5J	358	358	243	233	64	62	39-97	4	30	
Phenanthrene	ug/kg	125	358	358	330	278	57	43	34-110	17	39	
Pyrene	ug/kg	231	358	358	351	275	34	12	37-109	24	33 M1	
2-Fluorobiphenyl (S)	%						62	61	10-115			
Terphenyl-d14 (S)	%						65	66	10-121			

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

QC Batch: 287470 Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3546 Analysis Description: 8270/3546 MSSV PAH by SIM
Associated Lab Samples: 40167855014, 40167855015, 40167855016, 40167855017

METHOD BLANK: 1681988 Matrix: Solid
Associated Lab Samples: 40167855014, 40167855015, 40167855016, 40167855017

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	<4.0	13.4	05/01/18 15:05	
2-Methylnaphthalene	ug/kg	<5.0	16.7	05/01/18 15:05	
Acenaphthene	ug/kg	<3.9	12.9	05/01/18 15:05	
Acenaphthylene	ug/kg	<3.3	11.0	05/01/18 15:05	
Anthracene	ug/kg	<5.7	19.0	05/01/18 15:05	
Benzo(a)anthracene	ug/kg	<3.2	10.6	05/01/18 15:05	
Benzo(a)pyrene	ug/kg	<2.5	8.4	05/01/18 15:05	
Benzo(b)fluoranthene	ug/kg	<2.8	9.4	05/01/18 15:05	
Benzo(g,h,i)perylene	ug/kg	<2.0	6.8	05/01/18 15:05	
Benzo(k)fluoranthene	ug/kg	<2.5	8.4	05/01/18 15:05	
Chrysene	ug/kg	<3.4	11.2	05/01/18 15:05	
Dibenz(a,h)anthracene	ug/kg	<2.2	7.4	05/01/18 15:05	
Fluoranthene	ug/kg	<5.2	17.4	05/01/18 15:05	
Fluorene	ug/kg	<4.1	13.8	05/01/18 15:05	
Indeno(1,2,3-cd)pyrene	ug/kg	<2.2	7.3	05/01/18 15:05	
Naphthalene	ug/kg	<8.4	28.1	05/01/18 15:05	
Phenanthrene	ug/kg	<11.6	38.8	05/01/18 15:05	
Pyrene	ug/kg	<4.5	15.0	05/01/18 15:05	
2-Fluorobiphenyl (S)	%	59	10-115	05/01/18 15:05	
Terphenyl-d14 (S)	%	81	10-121	05/01/18 15:05	

LABORATORY CONTROL SAMPLE: 1681989

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	334	219	65	48-99	
2-Methylnaphthalene	ug/kg	334	214	64	47-91	
Acenaphthene	ug/kg	334	222	66	53-98	
Acenaphthylene	ug/kg	334	220	66	52-96	
Anthracene	ug/kg	334	250	75	55-105	
Benzo(a)anthracene	ug/kg	334	237	71	55-98	
Benzo(a)pyrene	ug/kg	334	247	74	57-100	
Benzo(b)fluoranthene	ug/kg	334	257	77	57-103	
Benzo(g,h,i)perylene	ug/kg	334	194	58	39-103	
Benzo(k)fluoranthene	ug/kg	334	260	78	53-111	
Chrysene	ug/kg	334	257	77	55-102	
Dibenz(a,h)anthracene	ug/kg	334	211	63	47-97	
Fluoranthene	ug/kg	334	241	72	51-118	
Fluorene	ug/kg	334	219	66	55-99	
Indeno(1,2,3-cd)pyrene	ug/kg	334	216	65	47-108	
Naphthalene	ug/kg	334	215	64	48-95	

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

LABORATORY CONTROL SAMPLE: 1681989

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenanthrene	ug/kg	334	247	74	55-105	
Pyrene	ug/kg	334	249	75	58-106	
2-Fluorobiphenyl (S)	%			63	10-115	
Terphenyl-d14 (S)	%			76	10-121	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1681990 1681991

Parameter	Units	40167838002 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
			Spike Conc.	Spike Conc.								
1-Methylnaphthalene	ug/kg	<5.0	415	415	127	159	30	38	41-99	22	30	M1
2-Methylnaphthalene	ug/kg	<6.2	415	415	128	159	31	38	41-91	21	27	M1
Acenaphthene	ug/kg	<4.8	415	415	225	237	54	57	46-98	5	25	
Acenaphthylene	ug/kg	<4.1	415	415	232	243	56	58	43-96	4	26	
Anthracene	ug/kg	<7.1	415	415	247	249	59	60	44-105	1	29	
Benzo(a)anthracene	ug/kg	<4.0	415	415	227	246	55	59	39-98	8	29	
Benzo(a)pyrene	ug/kg	<3.1	415	415	229	252	55	61	38-100	10	35	
Benzo(b)fluoranthene	ug/kg	<3.5	415	415	253	264	61	64	32-105	4	34	
Benzo(g,h,i)perylene	ug/kg	<2.5	415	415	177	159	43	38	12-103	11	35	
Benzo(k)fluoranthene	ug/kg	<3.1	415	415	265	274	64	66	30-115	3	37	
Chrysene	ug/kg	<4.2	415	415	236	262	56	63	46-102	11	27	
Dibenz(a,h)anthracene	ug/kg	<2.8	415	415	207	214	50	51	32-97	3	35	
Fluoranthene	ug/kg	<6.5	415	415	210	229	51	55	32-118	8	37	
Fluorene	ug/kg	<5.2	415	415	214	232	52	56	44-99	8	28	
Indeno(1,2,3-cd)pyrene	ug/kg	<2.7	415	415	202	207	49	50	20-111	2	33	
Naphthalene	ug/kg	<10.5	415	415	225	244	54	59	39-97	8	30	
Phenanthrene	ug/kg	<14.5	415	415	242	264	58	64	34-110	9	39	
Pyrene	ug/kg	<5.6	415	415	266	325	63	77	37-109	20	33	
2-Fluorobiphenyl (S)	%						46	55	10-115			
Terphenyl-d14 (S)	%						54	76	10-121			

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

QC Batch:	287438	Analysis Method:	ASTM D2974-87
QC Batch Method:	ASTM D2974-87	Analysis Description:	Dry Weight/Percent Moisture
Associated Lab Samples:	40167855012, 40167855013, 40167855014, 40167855015, 40167855016, 40167855017		

SAMPLE DUPLICATE: 1681747

Parameter	Units	40167889001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.7	18.8	1	10	

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QUALIFIERS

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

BATCH QUALIFIERS

Batch: 287116

[IP] Benzo(b)fluoranthene and benzo(k)fluoranthene were in the check standard but did not meet the resolution criteria in SW846 Method 8270C. Whereas sample results included are reported as individual isomers, the lab and the customer must recognize them as an isomeric pair.

ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

L1 Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results may be biased high.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1690004946 WWV-SITE 12.51

Pace Project No.: 40168265

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40167855012	PP-B-1 (2-3')	EPA 3546	287065	EPA 8270 by SIM	287116
40167855013	PP-B-1 (4-5')	EPA 3546	287065	EPA 8270 by SIM	287116
40167855014	PP-B-2 (2-3')	EPA 3546	287470	EPA 8270 by SIM	287554
40167855015	PP-B-2 (4-5')	EPA 3546	287470	EPA 8270 by SIM	287554
40167855016	PP-B-3 (2-3')	EPA 3546	287470	EPA 8270 by SIM	287554
40167855017	PP-B-3 (4-5')	EPA 3546	287470	EPA 8270 by SIM	287554
40167855012	PP-B-1 (2-3')	ASTM D2974-87	287438		
40167855013	PP-B-1 (4-5')	ASTM D2974-87	287438		
40167855014	PP-B-2 (2-3')	ASTM D2974-87	287438		
40167855015	PP-B-2 (4-5')	ASTM D2974-87	287438		
40167855016	PP-B-3 (2-3')	ASTM D2974-87	287438		
40167855017	PP-B-3 (4-5')	ASTM D2974-87	287438		

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C019a(27 Jun 2006)

Client Name: Ramsell

Sample Preservation Receipt Form

Project # 4067855All containers needing preservation have been checked and noted below: ☐ Yes ☒ No ☐ N/A

Lab Lot# of pH paper:

Lab Std #/ID of preservation (if pH adjusted):

Initial when completed:

Date/Time:

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302


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Pace Lab #	Glass						Plastic						Vials					Jars			General		VOA Vials (>6mm) *					pH after adjusted	Volume (mL)				
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN	H2SO4 pH ≤2			NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	
001																																	2.5 / 5 / 10
002																																	2.5 / 5 / 10
003																																	2.5 / 5 / 10
004																																	2.5 / 5 / 10
005																																	2.5 / 5 / 10
006																																	2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
009																																	2.5 / 5 / 10
010																																	2.5 / 5 / 10
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017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, O&G, WI DRO, Phenolics, Other: _____

Headspace in VOA Vials (>6mm) : ☐ Yes ☒ No ☐ N/A *If yes look in headspace column

Pace Lab #	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN
	1 liter amber glass	1 liter amber glass HCL	125 mL amber glass H2SO4	120 mL amber glass unpres	100 mL amber glass unpres	500 mL amber glass H2SO4	250 mL clear glass unpres	1 liter plastic unpres	500 mL plastic HNO3	500 mL plastic NaOH, Znact	250 mL plastic unpres	250 mL plastic NaOH	250 mL plastic HNO3	250 mL plastic H2SO4	40 mL amber ascorbic	40 mL amber Na Thio	40 mL clear vial unpres	40 mL clear vial HCL	40 mL clear vial MeOH	40 mL clear vial DI	4 oz amber jar unpres	4 oz clear jar unpres	4 oz plastic jar unpres	120 mL plastic Na Thiosulfate	ziploc bag	

 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Ramboll

Project #:

WO#: 40167855

Courier: ☒ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Walto
☐ Client ☐ Pace Other: _____



Tracking #:

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - NA

Type of Ice: Wet Blue Dry None

☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 10.2 / 10.2 / 10.2

Temp Blank Present: ☐ yes ☒ no

Biological Tissue Is Frozen: ☐ yes ☐ no

Person examining contents:

Date: 4/21/18

Initials: RS

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	MS/MSD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9. <u>old - old client covered vial tare weights</u>
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<u>4/21/18</u>
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: _____		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution:

If checked, see attached form for additional comments ☐

Person Contacted: _____

Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 4/23/18

Page 2 of 2

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Appendix C – Pertinent WDNR File Information



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Wisconsin Department of Natural Resources

Environmental Cleanup & Brownfields Redevelopment

BRRTS on the Web

Click the Location Name below to view the Location Details page for this Activity. Other Activities, if present, may be viewed from that page.

Basic Search >> 04-68-261966 Activity Details

04-68-261966 RTE POWER PRODUCTS CLOSED SPILL						
Location Name (Click Location Name to View Location Details)				County	WDNR Region	
RTE POWER PRODUCTS				WAUKESHA	SOUTHEAST	
Address				Municipality		
1011 SENTRY DR				WAUKESHA		
Public Land Survey System			Latitude	Google Maps	RR Sites Map	
Additional Location Description			Longitude	Facility ID	Size (Acres)	
				268253150	UNKNOWN	
Jurisdiction	PECFA No.	EPA Cerclis ID	Start Date	End Date	Last Action	
DNR RR			1997-01-06	1997-01-13	1997-01-13	
Characteristics						
PECFA Tracked?	EPA NPL Site?	Eligible for PECFA Funds?	Above Ground Storage Tank?	Drycleaner?	Co-Contamination?	On GIS Registry?
No	No	No	No	No	No	No
Actions						
Place Cursor Over Action Code to View Description						
Date	Code	Name	Comment			
1997-01-06	1	Spill Incident Occurred				
1997-01-06	5	Spill Reported to DNR				
1997-01-13	11	Spill Closed				
Impacts						
Type			Comment			
Soil Contamination			-			
Surface Water Contamination			-			
Spill Information						
Incident Date	Reported Date	Investigator	Source			
01/06/1997	01/06/1997	UNKNOWN	Industrial Facility (Foundry/Factory/Plating/Manufacturing)			
Cause: problem found when trenching for water utility.						
Comment: NONE						
Substances						
Substance			Type	Amount Released	Units	
Other Substance Not Listed (unknown substance)			Other			
Who						
Role		Name/Address				

BRRTS data comes from various sources, both internal and external to DNR. There may be omissions and errors in the data and delays in updating new information. Please see the [disclaimers page](#) for more information. We welcome your [Feedback](#).

The Official Internet site for the Wisconsin Department of Natural Resources
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GREELEY AND HANSEN

741 N. Grand Ave., Suite 308
Waukesha, WI 53186

Appendix III

4-230 D6 Phase II Environmental Site Assessment
Report – Site 12.57/12.58 – 303-309 Sentry Drive;
Waukesha, Wisconsin

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Great Lakes Water Supply Program



4-230 D6 Phase II Environmental Site Assessment Report

Site 12.57/12.58 – 303-309 Sentry Drive; Waukesha, WI
January 2019



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I, Kathryn Huibregtse, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



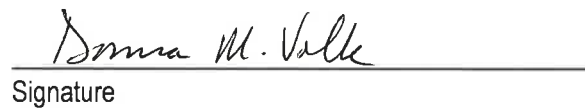
Signature

Title: Principal

P.E. License Number 18319

P.E. Stamp

I, Donna Volk, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code.



Signature

Title: Managing Consultant

License Number 246-013

January 14, 2019
Date

(NO TEXT FOR THIS PAGE)

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PROGRAM TEAM MEMBER CONSULTANTS:



RAMBOLL

SECTION 1 Introduction

The Great Water Alliance (Program) developed six route alignments for both a Water Supply and Return Flow Pipeline in 2016 and selected the three most viable route alternative alignments, designated as Route Alternatives 2, 3, and 4, for further review on a wide range of criteria. In the first half of 2017, Ramboll US Corporation (Ramboll) performed a desktop review on the three route alternatives for the Return Flow Pipeline regarding the financial and schedule implications of encountering contaminated soil and groundwater during construction. The goal of the desktop review was to identify sites where contamination was present and either avoid or mitigate the costs and possible schedule delays associated with management of hazardous materials. The Program then combined the findings of the contaminated materials desktop review with other technical evaluations during their selection of the preferred route for the Return Flow Pipeline. Based on this evaluation, Route Alternative 3 was selected by the Program as the preferred route for the Return Flow Pipeline.

During the second half of 2017, Ramboll conducted focused Phase II Environmental Site Assessments (ESAs) in the public right-of-way adjacent to 23 sites/clusters of sites identified along the Return Flow portion of Route Alternative 3 during the desktop environmental review. The goal of conducting Phase II ESAs is to identify whether impacts exist within the right-of-way from known or likely sources of contamination on or near the pipeline alignment that could affect the route design, construction costs for remediation, or project schedule. As discussed in the draft *Program-Wide Contaminated Soil and Groundwater Management Plan (DEL 3-130 D3)*, Phase II investigation reports will also include site-specific proposed soil and groundwater handling procedures to supplement the more general Program-wide handling procedures discussed therein. Site-specific material handling procedures will include proposed reuse, temporary staging, and/or disposal methods recommended based on the degree of impacts confirmed at the site. As needed, Phase II reports will also include proposed long-term direct contact protection approaches consistent with the site-specific land use in the right-of-way. These direct contact barriers will be placed in conjunction with construction, backfill, and revegetation activities for the pipeline installation. Pipeline construction is anticipated to begin in late 2019 or early 2020.

This report focuses on the Phase II ESA within the right-of-way near the Linde Gas LLC/AGA Gas, Inc. site ("Site 12.57") and the O'Rourke Distributing Co. site ("Site 12.58") located at 309 Sentry Drive and 303 Sentry Drive, respectively, in Waukesha, Wisconsin. Site 12.57 is identified by the Wisconsin Department of Natural Resources (WDNR) as Bureau for Remediation and Redevelopment Tracking System (BRRTS) Number 02-68-00037. Site 12.58 is identified by WDNR BRRTS Numbers 07-68-530140, 10-68-529106, 03-68-529106, 02-68-529106, 03-68-001323, and 03-68-558431. The BRRTS Numbers with the 02 and 03 designations are assigned by the WDNR to track the various releases that have occurred at the property over time. The BRRTS Number with the 07 designation was assigned to track various activities related to liability exemptions, liability clarifications, and cleanup agreements. The BRRTS Number with the 10 designation was assigned as a placeholder to indicate that several 02 and 03 designated activities were merged together. **Sections 3 to 7** of this report provide background and rationale for conducting a focused Phase II ESA at the right-of-way adjacent to Site 12.57 and 12.58; scope and methods of the ESA; results of the ESA; and conclusions regarding the impact of contaminated materials that will be encountered during construction. Based on the results of this investigation, recommendations for soil management during construction in accordance with Wisconsin Administrative Code (WAC) NR 718.12(1) are provided in **Section 8** of this report.

SECTION 2 Involved Parties

The following parties are involved with the Sites:

Program Owner: Waukesha Water Utility
 115 Delafield Street
 P.O. Box 1648
 Waukesha, WI 53187
 Contact: Kelly Zylstra, (262) 409-4430

Program Design Engineer: Greeley and Hansen
 741 North Grand Avenue, Suite 308
 Waukesha, WI 53186
 Contact: Catharine Richardson, (312) 578-2347

Environmental Consultant: Ramboll US Corporation
 175 North Corporate Drive, Suite 160
 Brookfield, WI 53045
 Contact: Donna Volk, (262) 901-3504

Drilling Contractor: On-site Environmental Services, Inc.
 P.O. Box 280
 Sun Prairie, WI 53590
 Contact: Kim Kapugi, (608) 837-8992

Laboratories: ALS Environmental
 3352 128th Avenue
 Holland, MI 49424
 Contact: Chad Whelton, (616) 582-5201

 Pace Analytical Laboratories
 1241 Bellevue Street, Suite 9
 Green Bay, WI 54302
 Contact: Steve Mieczko, (920) 469-2436

Right-of-Way Holder: City of Waukesha
 130 Delafield Street
 Waukesha, WI 53188
 Contact: Alex Damien, (262) 524-3907

Agency: Wisconsin Department of Natural Resources
 101 South Webster Street
 Madison, WI 53703
 Contact: Paul Grittner, (608) 266-0941

SECTION 3 Site Background

Ramboll identified the Linde Gas LLC/AGA Gas, Inc. site ("Site 12.57"), located at 309 Sentry Drive, and the O'Rourke Distributing Co. site ("Site 12.58"), located at 303 Sentry Drive, Waukesha, Wisconsin, as potentially contaminated sites in the *Contaminated Materials Technical Memorandum (4-120 D1)*, dated January 2018. A Phase II ESA was likely to be needed. Site 12.57 borders Sentry Drive at its western property boundary for a total distance of approximately 800 feet, and adjacent Site 12.58 borders Sentry Drive at its western property boundary for a total distance of approximately 200 feet. Both sites are currently zoned as M-2 General Manufacturing District. The assessment was extended from the northern portion of Site 12.58 to approximately 400 feet to the south of Site 12.57, a total linear distance of approximately 1,200 feet, in order to assess potential impacts from both properties as well as those from an area-wide chlorinated volatile organic compound (CVOC) plume in groundwater noted in previous investigations performed on both Sites 12.57 and 12.58. Both sites are located on the east side of Sentry Drive, and the route for the Return Flow Pipeline alignment runs along the right-of-way on the west side of Sentry Drive.

According to information from files available through the WDNR, impacts to soil and groundwater from petroleum compounds and solvents were identified across Site 12.58. Petroleum impacts are believed to have originated from a former fueling island located on Site 12.58 approximately 75 feet east of Sentry Drive and from fuel aboveground storage tanks (ASTs) further to the east. All former underground storage tanks (USTs) and ASTs have been removed from the site, and a groundwater extraction and treatment system was operated from 1997 to 1998. Impacts to site groundwater from chlorinated solvents are attributed to an area-wide CVOC groundwater plume, which is generally believed to originate to the east of Site 12.58. All but two (03-68-001323 and 03-68-558431) of the identified releases associated with this property have been granted regulatory closure, and it appears that the two remaining open cases have been combined. Groundwater was observed to flow southwest across the site, toward the right-of-way, and groundwater impacts were noted to extend onto the southern adjoining property. However, groundwater impacts from petroleum volatile organic compounds (PVOCs) were not observed in the monitoring well located downgradient of the plume. This monitoring well was not analyzed for CVOCs. Closure for the two remaining open listings was denied in 2013, requiring that a cover or barrier be installed prior to site closure. Based on the groundwater flow direction and the absence of CVOC groundwater data from the downgradient well, there is the potential for CVOC impacts to be observed in the right-of-way along Sentry Drive.

Groundwater contamination from chlorinated solvents was also encountered on Site 12.57 located to the south of Site 12.58. According to information from WDNR files related to Site 12.58, it was determined that the source of CVOCs to groundwater in this area was not located on the site. However, the specific source has not been confirmed. The northwesterly flow of groundwater across the sites (toward the right-of way) suggests that the CVOC plume may originate to the southeast of the sites. The extent of contamination has not been defined, and the listing associated with the Linde/AGA site (02-68-000037) remains open.

Based on confirmed soil and groundwater impacts at these sites; the apparent area-wide CVOC impacts noted in groundwater from several sites including the two noted herein; the mobility of the contaminants in groundwater; and the limited investigation along the right-of-way within Sentry Drive, Phase II investigation activities were conducted to identify whether impacts exist within the right-of-way that will require special handling during pipeline construction. Pertinent information from WDNR files for both sites is provided as **Appendix C**.

SECTION 4 Investigation Preparatory Activities

There were five primary factors for Site 12.57 and four primary factors for Site 12.58 that contributed to the recommendation for a Phase II Site Investigation to be conducted at the properties, including:

Site 12.57

- Pertinent Data Gaps: The extent of impacts is not fully defined.
- Confirmed Release: A known release of chlorinated solvents and perchloroethylene has impacted soil, groundwater, and the vapor intrusion pathway.
- Groundwater Impacts: Groundwater impacts have been identified by previous site exploration.
- Contaminant Type: Chlorinated solvents have been identified by previous site exploration.
- Proximity to Right-of-Way: Contamination is suspected to have migrated to the right-of-way based on groundwater flow direction.

Site 12.58

- Confirmed Release: A known release of chlorinated solvents, gasoline and diesel fuel has impacted soil and groundwater.
- Groundwater Impacts: Groundwater impacts have been identified by previous site exploration.
- Contaminant Type: Chlorinated solvents have been identified by previous site exploration.
- Proximity to Right-of-Way: Contamination is suspected to have migrated to the right-of-way based on groundwater flow direction.

Based on this information, Ramboll proposed a Phase II investigation that included collecting samples from seven locations within the right-of-way of Sentry Drive across the street from the two sites' western boundaries and extending south approximately 400 feet from Site 12.57. On October 12, 2017, Ramboll collected two soil samples from each boring; one from between approximately 4 to 5 feet below ground surface (bgs), shallow interval, and one from approximately 10 to 12 feet bgs, near the presumed shallow groundwater table. Soil sample depth intervals were adjusted based on professional judgement to address conditions encountered in the field. Additionally, Ramboll converted all seven of the soil boring locations into temporary monitoring wells to facilitate the collection of groundwater samples if groundwater was encountered at an elevation above the terminal depth of the soil borings.

Based on the soil and groundwater analytical results obtained from the samples collected in October 2017, Ramboll recommended that soil samples be collected from six additional soil borings at the site and two additional groundwater samples collected from two soil borings converted to temporary wells, to confirm and more completely delineate the extent of chlorinated VOC-impacts encountered at soil boring LG-B-6 and detections of VOCs, including chlorinated VOCs, in groundwater from 6 of 7 temporary monitoring wells. On April 19, 2018, Ramboll collected two soil samples from LG-B-10 and LG-B-11 to confirm the tetrachloroethene (PCE) impacts identified in LG-B-6, while two soil samples collected from LG-B-9 and LG-B-12 were to be used for delineation of PCE-impacted soil that was encountered in LG-B-10 or LG-B-11. One soil sample was collected from LG-B-8 and LG-B-13 to be used to confirm that PCE impacted soils were not present in these areas. Soil samples collected from LG-B-9, LG-B-10, LG-B-11, and LG-B-12 were collected from between approximately 4 to 5 feet bgs, shallow interval, and from approximately 10 to 12 feet bgs, near the presumed shallow groundwater table. Soil samples collected from LG-B-8 and LG-B-13 were collected from between approximately 3 to 4 feet bgs. Soil sample depth intervals were adjusted based on professional judgement to address

conditions encountered in the field. Groundwater samples were collected from LG-B-8 and LG-B-13 to evaluate the southern and northern extent of VOC impacts to groundwater.

Based on the additional soil and groundwater analytical results obtained from the samples collected in April 2018, Ramboll recommended that soil samples be collected from four additional soil borings at the site and that the temporary monitoring wells installed at LG-B-8 and LG-B-13 be resampled, to more completely delineate the extent of chlorinated VOC-impacts encountered at soil borings LG-B-6, LG-B-9, LG-B-10, LG-B-11, and LG-B-12 and to confirm the low level VOC detections in the groundwater at LG-B-8 and LG-B-13. Soil samples collected from LG-B-14 and LG-B-15 were to be located south of LG-B-9, and LG-B-16 and LG-B-17 were located to the north of LG-B-12, to further delineate PCE-impacted soil. On August 28, 2018, Ramboll collected three soil samples from each boring; one from approximately 1 to 2 feet bgs, near the surface, one from approximately 4 to 5 feet bgs, the unsaturated zone, and one from approximately 10 to 12 feet bgs, below the shallow groundwater elevation. Soil sample depth intervals were adjusted based on professional judgement to address conditions encountered in the field. Additional groundwater samples were collected from LG-B-8 and LG-B-13 to confirm low-level VOC impacts in groundwater. **Table 4-1** presents a summary of the soil and groundwater sampling and analysis conducted.

Table 4-1 – Soil Boring and Analytical Testing Information

Boring Location/ Designation	Boring Depth (feet bgs)	Soil		Groundwater ¹
		Sample Depth (feet bgs)	Analytical Testing	Analytical Testing
LG-B-1	18	4-5	VOCs	VOCs
		13.5-14	VOCs	
LG-B-2	18	2.5-3.5	VOCs	VOCs
		9-10	VOCs	
LG-B-3	16	4-5	VOCs	VOCs
		9-10	VOCs	
LG-B-4	18	2-3	VOCs	VOCs
		7.5-8.5	VOCs	
LG-B-5	18	4-5	VOCs	VOCs
		9-10	VOCs	
LG-B-6	18	4-5	VOCs	VOCs
		10-11	VOCs	
LG-B-7	18	4-5	VOCs	VOCs
		8-9	VOCs	
LG-B-8	15	3-4	VOCs	VOCs
LG-B-9	15	5-6	VOCs	--
		10-11	VOCs	
LG-B-10	15	4-5	VOCs	--
		11-12	VOCs	

Boring Location/ Designation	Boring Depth (feet bgs)	Soil		Groundwater ¹
		Sample Depth (feet bgs)	Analytical Testing	Analytical Testing
LG-B-11	15	4-5	VOCs	--
		9-10	VOCs	
LG-B-12	15	5-6	VOCs	--
		9-10	VOCs	
LG-B-13	22	2.5-3.5	VOCs	VOCs
LG-B-14	15	1-2	VOCs	--
		4-5	VOCs	
		10-11	VOCs	
LG-B-15	15	1-2	VOCs	--
		4-5	VOCs	
		10-11	VOCs	
LG-B-16	15	1-2	VOCs	--
		5-6	VOCs	
		10-11	VOCs	
LG-B-17	15	1-2	VOCs	--
		4-5	VOCs	
		10-11	VOCs	

Notes:

1. The temporary groundwater monitoring wells were left in place following installation to allow for sufficient water to collect in the well casing before sampling. The temporary wells were abandoned within 6 months of the date of installation.

SECTION 5 Investigation Methodology

The following sections describe the methodology that was utilized during performance of the Phase II activities performed in the right-of-way to the west of Sentry Drive. Investigation activities were conducted in an area occupying a total linear distance of approximately 1,200 feet extending from across the street from the northern portion of Site 12.58, located at 303 Sentry Drive, to approximately 400 feet to the south of Site 12.57, located at 309 Sentry Drive, Waukesha, Wisconsin. Soil boring and temporary well locations are shown on **Figure 1**.

5.1 Investigation Preparatory Activities

5.1.1 Health and Safety

Prior to on-site activities in October 2017, a site-specific Health and Safety Plan (HASP) was developed in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910 for the proposed field activities. Ramboll reviewed the site-specific HASP with all field personnel prior to commencing the field activities. Prior to additional on-site activities in April and August 2018, the previously used site-specific HASP was updated to reflect additional site investigation activities.

5.1.2 Location of Utilities

Ramboll contacted Digger's Hotline for the location of public utilities in the area of investigation prior to initiating any sub-surface work in October 2017, April 2018, and August 2018. A private utility locator was also retained to confirm the location of underground utilities in the vicinity of the proposed sample locations.

5.1.3 Permitting

This site is located in Waukesha, Wisconsin. Prior to conducting subsurface work on public property in this municipality, Ramboll secured the necessary permits required to perform work in the public right-of-way. For this site, permits were obtained from the City of Waukesha. Local police, fire, and other agencies were notified of the schedule for subsurface work, as appropriate, by other members of the Program.

5.2 Field Activities

5.2.1 Soil Borings

On October 12, 2017, seven soil borings (LG-B-1, LG-B-2, LG-B-3, LG-B-4, LG-B-5, LG-B-6, and LG-B-7) were advanced in the public right-of-way along the west side of Sentry Drive in locations where previous desktop assessments identified evidence of potential soil or groundwater contamination that could be encountered along the Return Flow Pipeline alignment. The soil borings were advanced by On-Site Environmental Services with a Ramboll representative present to guide the field activities, observe and document soil and groundwater conditions and screen and collect laboratory samples. The soil borings were advanced with a hydraulic probe utilizing a 2-inch diameter drive rod to collect a continuous soil sample. The soil samples were collected inside of a polyethylene sheath inserted into the end of the drive rod. All soil borings were advanced to depths of approximately 18 feet below grade to characterize soils likely to be encountered while installing pipe to a maximum depth of approximately 13 feet below grade. Soil samples were continuously collected from the borings for visual classification, field screening, and laboratory analysis. The soil samples

were described in the field with respect to the soil type, grain size distribution, and color (or discoloration), odor, and moisture content. Observations from the borings were recorded on soil boring log forms, provided in **Appendix A**.

On April 19, 2018, six soil borings (LG-B-8, LG-B-9, LG-B-10, LG-B-11, LG-B-12, and LG-B-13) were advanced in the public right-of-way along South Sentry Drive by On-Site Environmental Services with a Ramboll representative present to guide the field activities, observe and document soil and groundwater conditions and screen and collect laboratory samples. The soil borings were advanced with a hydraulic probe utilizing a 2-inch diameter drive rod to collect a continuous soil sample. The soil samples were collected inside of a polyethylene sheath inserted into the end of the drive rod. Five of six soil borings were advanced to depths of approximately 15 feet below grade to characterize soils in the depth ranges where impacts had been previously identified in LG-B-6; one soil boring (LG-B-13) was advanced to a depth of approximately 22 feet below grade due to a deeper water table and to allow for a sufficient amount of groundwater to recharge for sampling. Soil samples were collected continuously from the borings for visual classification, field screening, and laboratory analysis. The soil samples were described in the field with respect to the soil type, grain size distribution, and color (or discoloration), odor, and moisture content. Observations from the borings were recorded on soil boring log forms, copy provided in **Appendix A**.

On August 28, 2018, four soil borings (LG-B-14, LG-B-15, LG-B-16, and LG-B-17) were advanced in the public right-of-way along South Sentry Drive by On-Site Environmental Services with a Ramboll representative present to guide the field activities, observe and document soil and groundwater conditions and screen and collect laboratory samples. The soil borings were advanced with a hydraulic probe utilizing a 2-inch diameter drive rod to collect a continuous soil sample. The soil samples were collected inside of a polyethylene sheath inserted into the end of the drive rod. All four soil borings were advanced to depths of approximately 15 feet below grade to characterize soils in the depth ranges where impacts had been previously identified in LG-B-6, LG-B-9, LG-B-10, LG-B-11, and LG-B-12. Soil samples were collected continuously from the borings for visual classification, grain size distribution, and color (or discoloration), odor, and moisture content. Observation from the borings were recorded on soil boring log forms, copy provided in **Appendix A**.

5.2.2 Soil Sampling Methods

The soil samples were screened in the field using a 10.6 electron volt (EV) photoionization detector (PID) to evaluate for the presence of total VOCs. The PID was calibrated in the field according to manufacturer's instructions, using 100 parts per million (ppm) isobutylene span gas and air (zero gas), and checked between each screening event for proper response. The PID readings and visual/olfactory evidence of contamination, if observed, were recorded on the boring logs included in **Appendix A**.

Soil boring locations were chosen based on the location of the proposed Return Flow Pipeline. For the work executed in October 2017, soil boring locations were evenly spaced approximately 200 to 300 feet apart along the western road right-of-way of Sentry Drive, adjacent to the western property boundary of Sites 12.57 and 12.58. The locations were selected to determine whether or not residual contamination from the BRRTS incidents associated with Site 12.57 and 12.58 exist in the right-of-way of Sentry Drive and would potentially be encountered during the construction of the Return Flow Pipeline. Fourteen soil samples were collected during this phase of the site investigation (two samples per soil boring). Based on analytical results from the October 2017 site investigation, eight additional soil borings spaced approximately 20 to 30 feet apart were advanced in April and August 2018 in the area of one of the borings advanced in October 2017 (LG-B-6) to confirm and delineate soil impacts. Two additional soil borings were advanced to the south and north of the previously investigated area along the right-of-way to delineate the extent of groundwater impacts at the site. Twenty-two additional soil samples were collected during these phases of the site investigation.

For the work conducted in October 2017, two subsurface soil samples were collected from each of the soil borings for laboratory analysis. If visual or olfactory evidence or elevated PID readings were noted, a soil sample was collected from the interval at which the most significant impacts were observed. If soil without evidence of impacts was noted at a depth greater than observed impacts, a second sample was collected from this interval to delineate the vertical extent of contamination. If no visual or olfactory evidence or elevated PID readings were noted at any depth interval of a soil boring, a sample was collected from the interval most likely to be impacted based on a review of available site documents and field observations, such as apparent depth to groundwater. Following soil sample collection activities, all of the soil borings were converted into temporary monitoring wells.

For the additional site investigation activities conducted in April 2018, one to two subsurface soil samples were collected from each of the soil borings for laboratory analysis. At two of the soil borings (LG-B-8 and LG-B-13), one sample was collected from between 2.5 and 4 feet bgs (from the direct contact interval). At four of the soil borings (LG-B-9, LG-B-10, LG-B-11, and LG-B-12), one sample was collected from between 4 to 6 feet bgs, and a second sample from between 9 and 12 feet bgs. These sample depth intervals were chosen to be at approximate depths where PCE impacts were previously identified in LG-B-6.

For the additional site investigation activities conducted in August 2018, three soil samples were collected from each of the soil borings for laboratory analysis. One sample was collected from between 1 and 2 feet bgs (just below ground surface), and the other two samples were collected from between 4 and 6 feet bgs and 10 and 11 feet bgs (depth intervals where impacts were previously identified in adjacent borings).

5.2.3 Temporary Monitoring Well Installation

Seven soil borings (LG-B-1 through LG-B-7) were converted into temporary groundwater monitoring wells on October 25, 2017, to facilitate the collection of groundwater samples. Evidence of groundwater was encountered at approximate depths of 7 to 12.5 feet bgs, during drilling, therefore the wells were installed to depths of approximately 16 to 18 feet bgs. Temporary monitoring wells were constructed using a 1-inch diameter PVC riser with a 10-foot section of 0.01-inch-slotted well screen. The well was completed by installing a sand filter pack around and approximately 1 to 2 feet above the well screen and granular bentonite above the filter pack to near the ground surface. A flush-mount protector pipe was installed at the ground surface and the ground surface seal was constructed to match the existing surface.

The temporary monitoring wells at LG-B-8 and LG-B-13 were constructed on April 19, 2018, using a 1-inch diameter PVC riser with a 10-foot section of 0.01-inch-slotted well screen. Evidence of groundwater was encountered at approximate depths of 10 to 19 feet bgs during drilling. LG-B-8 was installed to a depth of 15 feet bgs and LG-B-13 was installed to a depth of 22 feet bgs. The wells were completed by installing a sand filter pack around and approximately 1 to 2 feet above the well screen and granular bentonite above the filter pack to near the ground surface. A flush-mount protector pipe was installed at the ground surface and the ground surface seal was constructed to match the existing surface. The groundwater samples were collected from the temporary monitoring wells as described in **Section 5.2.4**.

5.2.4 Groundwater Sampling Methodology

Groundwater samples were collected from LG-B-1 through LG-B-7 on October 25, 2017. Groundwater samples were collected from LG-B-8 and LG-B-13 on April 26, 2018, and again on August 22, 2018. The groundwater samples were collected using a low-flow technique and a peristaltic pump fitted with disposable tubing. The pump was used to purge a small volume of water from the temporary well in an attempt to reduce turbidity. Groundwater sampling equipment was thoroughly decontaminated between each sampling location using an Alconox® solution and rinsed in deionized water.

New disposable polyethylene tubing was utilized for sample collection for each well location. A new pair of nitrile gloves was used during the collection of each sample to minimize the potential for cross-contamination. Temporary monitoring wells LG-B-1 through LG-B-7 were abandoned on November 21, 2017. Temporary monitoring wells LG-B-8 and LG-B-13 were abandoned on August 28, 2018. Riser pipes were removed to the extent practical, and the boreholes were filled with hydrated bentonite in accordance with WAC NR 141.25 requirements. The boreholes were then completed with a surface patch matching the surrounding ground surface material. Abandonment forms are provided in **Appendix A**.

5.2.5 Soil and Groundwater Sample Collection and Laboratory Analysis

The soil samples collected during the October 2017, April 2018, and August 2018 mobilizations were containerized in one laboratory-provided 40-milliliter (mL) glass sample container, preserved with methanol to analyze for VOCs and a 250-mL plastic container to obtain dry weight. The groundwater samples were containerized in three laboratory-provided 40-mL glass sample containers, preserved with hydrochloric acid (HCl). Following sample collection, each sample container was labeled with the sample location identification, date of sample collection, and intended analysis. The sample containers were then placed in re-sealable plastic bags and packed in an iced, insulated container.

A chain-of-custody form was completed daily after sampling and accompanied the insulated container of samples to the laboratory. The chain-of-custody form was signed by the sampler and completed in a legible manner using waterproof ink. The selected October 2017 samples were placed on ice and submitted to ALS Environmental, a Wisconsin-certified laboratory, located in Holland, Michigan, for analysis, following standard chain-of-custody procedures. The selected April 2018 and August 2018 samples were placed on ice and submitted to Pace Analytical Services, a Wisconsin-certified laboratory, located in Green Bay, Wisconsin, for analysis, following standard chain-of-custody procedures. Samples from both site investigations were transported to the laboratory via a commercial courier.

Soil and groundwater samples were analyzed for the site-specific contaminants of concern identified from previous site investigation activities. Analysis for soil and groundwater samples collected include VOCs using United States Environmental Protection Agency (USEPA) Method 8260B. For quality assurance/quality control purposes, one trip blank sample was included in every cooler delivered to the sample courier and was analyzed for VOCs. Laboratory analytical results are provided in **Appendix B**.

5.3 Investigation Derived Waste Management

Due to the small amount of soil generated during the advancement of the soil borings, excess soils were not generated during field investigations conducted by Ramboll. Soil obtained from soil borings collected using the hydraulic probe was containerized as samples and returned to Ramboll's office to verify classification, and was then disposed of as solid waste, after receipt of analytical testing results. The small volume of water generated from the purging and sampling of the temporary monitoring wells was placed in 5-gallon pails and disposed at the City of Waukesha Clean Water Plant.

SECTION 6 Subsurface Assessment Results

6.1 General Soil and Groundwater Conditions

Soils at the site consist primarily of silt and clay fill soil to depths ranging from approximately 0.5 to 9 feet bgs underlain by sand or sand and gravel undisturbed natural soils in a majority of the soil borings. There were no non-exempt fill types (such as ash, cinders, or foundry sand) noted in the fill soil. The approximately 8 to 10 feet fill soil layer was generally underlain by a relatively thin (approximately 1 to 1.5 feet) transition layer that included a mix of sands and silty/sandy clays. Beneath the transition layer, primarily tan/light brown sand and gravel was encountered to the terminal depth of each boring (15 to 22 feet bgs). Depth to groundwater measurements collected from the seven temporary wells installed in October 2017 ranged from approximately 7 to 12 feet bgs. Depth to groundwater measurements collected from the two temporary wells installed in April 2018 ranged from approximately 13 to 15 feet bgs. PID readings ranged from 0.1 to 9.8 instrument units (iu).

6.2 Soil Quality Results

The soil analytical results were tabulated and compared to the generic Residual Contaminant Levels (RCLs) published in WAC NR 720, which are based on the protection of human health from direct contact and the protection of groundwater. Detected compounds along with their respective RCLs are provided on **Table 1**.

Of the fourteen soil samples collected from the site in October 2017, VOCs were detected in the two soil samples collected from soil boring LG-B-6. PCE was detected at a concentration of 190 micrograms per kilogram ($\mu\text{g}/\text{kg}$) in the shallow fill soil sample (4 to 5 feet bgs) and 950 $\mu\text{g}/\text{L}$ in the deep sand and gravel sample (10 to 11 feet bgs), both of which exceed the WAC NR 720 Groundwater Pathway RCL. No other VOC constituents were detected in any of the soil samples.

Of the ten soil samples collected in April 2018, VOCs were detected in one or both of the samples from four locations: LG-B-9, LG-B-10, LG-B-11, and LG-B-12. Consistent with the Fall 2017 sampling, the only VOC constituent detected above standards was PCE. Depths of impacts were also similar to results at LG-B-6 with PCE detected in two shallow samples collected from soil borings LG-B-9 and LG-B-12 at depths ranging from 5 to 6 feet bgs and in four deep samples collected from soil borings LG-B-9, LG-B-10, LG-B-11, and LG-B-12 at depths ranging from 9 to 12 feet bgs at concentrations between 42.8 to 934 $\mu\text{g}/\text{kg}$. All six soil samples contained PCE at concentrations exceeding the WAC NR 720 Groundwater Pathway RCL for PCE of 4.54 $\mu\text{g}/\text{kg}$.

The final round of soil samples was collected in August 2018. Results were consistent with previous sample results except for the presence of a detected laboratory contaminant (methylene chloride) discussed below. VOCs were detected in one or more of the soil samples collected from LG-B-14, LG-B-15, LG-B-16, and LG-B-17. PCE was detected in soil samples collected from LG-B-16, at concentrations of 113 $\mu\text{g}/\text{L}$ at 5 to 6 feet bgs and 724 $\mu\text{g}/\text{kg}$ at 10 to 11 feet bgs, but not in the sample collected from 1 to 2 feet bgs. PCE was also quantified in the deep soil samples collected from three additional soil borings LG-B-14, LG-B-15, and LG-B-17 at depths of 10 to 11 feet bgs at concentrations ranging from 166 to 828 $\mu\text{g}/\text{L}$, but not in the two shallower samples. The detected concentrations of PCE exceeded the WAC NR 720 Groundwater Pathway RCL of 4.54 $\mu\text{g}/\text{kg}$.

Methylene chloride was detected in eight of the twelve soil samples collected during the August 2018 sampling event at concentrations ranging from 30.4 to 144 $\mu\text{g}/\text{L}$. This compound is a common laboratory-based contaminant and was

detected in the associated trip blank. Based upon these considerations, methylene chloride is not considered a site related constituent of concern. Soil detections are shown on **Figure 2**.

6.3 Groundwater Quality Results

The groundwater analytical results were tabulated and compared to the WAC NR 140 Enforcement Standards (ESs) (generally equivalent to the USEPA's Maximum Contaminant Levels), Preventive Action Limits (PALs), which are either 10 or 20 percent of the ESs. Groundwater results are summarized on **Table 2** and a copy of the laboratory analytical report is provided in **Appendix B**.

No VOCs were detected in the groundwater sample collected in October 2017 from monitoring well location LG-B-3. PCE, a common cleaning/degreasing product, was detected in groundwater samples collected from six of the seven monitoring well locations at concentrations ranging from 1.0 to 92 µg/L. Three of these detections were above the PAL for PCE (0.5 µg/L) and three were above the ES (5.0 µg/L). Trichloroethene (TCE), a common break-down product of PCE and another compound typically used as a cleaning/degreasing solvent, was detected in groundwater samples collected from five of the seven borings, at concentrations ranging from 2.1 to 10 µg/L. Two of these detections were above the PAL of 0.5 µg/L and three of these detections were above the ES of 5 mg/L. Cis-1,2-dichloroethene, another breakdown product of PCE and TCE, was detected in LG-B-6, at a concentration of 0.56 µg/L, below groundwater quality standards. Additionally, chloroform was detected in LG-B-4 at 0.52 µg/L and in the trip blank at 0.47 µg/L. As such, chloroform is not considered to be a confirmed contaminant of concern for the site.

During the April 2018 sampling event, PCE and its breakdown products were not detected in the groundwater samples collected from monitoring well locations LG-B-8 or LG-B-13. There were four other VOC detections in the groundwater sample collected from LG-B-8. One of these constituents, bromodichloromethane, was present at a concentration of 1.8 µg/L, which exceeds the ES (0.6 µg/L) for this constituent. Another constituent, chloroform, was detected at 2.9 µg/L, exceeding the PAL of 0.6 µg/L. Only one VOC (chloromethane) was detected in LG-B-13; however, its concentration (1.9 µg/L) is below groundwater quality standards.

During the August 2018 sampling event, bromodichloromethane was again present in the sample collected from LG-B-8. The reported concentration of 0.79 µg/L was lower than that reported in April and was qualified by the laboratory as being an estimated value, detected below the laboratory quantitation limit. TCE was also detected at 0.33 µg/L in the groundwater sample collected from LG-B-8; however, this concentration does not exceed standards and was not detected at this location during the April sampling event and was present at a concentration estimated above of the limit of detection (LOD) and below the limit of quantitation (LOQ). There were no VOCs detected in the groundwater sample collected from LG-B-13.

SECTION 7 Conclusions

Based on the soil and groundwater analytical results, the site appears to have localized chlorinated solvent impacts in soil and widespread chlorinated solvent impacts in groundwater along portions of the Return Flow Pipeline in this area. Site investigation activities identified PCE in soil samples collected from LG-B-6, LG-B-9, LG-B-10, LG-B-11, LG-B-12, LG-B-14, LG-B-15, LG-B-16, and LG-B-17 with the highest concentrations appearing to be centered around LG-B-6 and LG-B-10. At LG-B-6, LG-B-9, LG-B-12, and LG-B-16, PCE impacts were detected in the shallow (4 to 6 feet bgs), unsaturated soil, which would indicate either a shallow release or contamination originating in fill material. CVOs were not detected in the samples collected from 1 to 2 feet bgs in LG-B-14, LG-B-15, LG-B-16, and LG-B-17, which indicates that it is unlikely that the impacts resulted from a surface release at these boring locations. No obvious source of PCE is present in the area where the constituent was detected. The PCE impacts in the soil appear to be defined by soil samples with no detectable VOCs collected from LG-B-5, approximately 150 feet north of LG-B-17 and from LG-B-7, approximately 150 feet to the south of LG-B-14.

In addition to the localized soil impacts, the deeper on-site soils appear to be impacted by an area-wide chlorinated solvent groundwater plume which is believed to originate from the heavy industrial area to the east of Sentry Drive, although no specific source(s) has been identified by the WDNR or Ramboll after review of the WDNR BRRTS records obtained as part of the Route Study evaluation. The extent of the PCE impacts in groundwater have been defined by LG-B-13 and LG-B-8; however, trace concentrations of other VOCs were detected in both of these wells.

Based on this information and data, Ramboll has concluded that approximately 1,685 cubic yards of localized impacted soil at the site requires special handling, specifically off-site disposal. In addition, Ramboll has concluded that contaminated groundwater encountered during excavation activities will require filtration and disposal after approvals are obtained from the Waukesha Clean Water Plant. Soil and groundwater special handling recommendations are provided in **Section 8**.

SECTION 8 Recommendations for Soil and Groundwater Handling

Based on information and data collected during Phase II Site Investigation activities, Ramboll has identified an area extending approximately 500 feet along Sentry Drive with confirmed CVOC-impacted soil that will likely be encountered during excavation activities for the Return Flow Pipeline. Impacted soils from the pipeline excavation extending along Sentry Drive extending from LG-B-7 on the south and continuing approximately 500 feet to the north (to LG-B-5) will require special handling and off-site disposal at a licensed landfill in accordance with WAC NR 500.

The excavation trench for the Return Flow Pipeline in this area is estimated to be 7 feet wide and 13 feet deep. Based on the trench dimensions and the 500-foot-long impacted area, approximately 1,685 cubic yards of soil will require special handling and off-site disposal (bounded by LG-B-5 to the north and LG-B-7 to the south, which had no detections of VOCs). It is recommended that a designated Environmental Professional (EP) be present on site to observe soils during construction. The EP will record the quantities of soil removed from the site for documentation purposes and observe the excavation activities for consistency with handling recommendations. The extensive amount of data both in the planned excavation area and clean samples collected from LG-B-5 and LG-B-7 have established the extent of contamination. The use of the EP will provide field observations as additional support for these results. The quantities removed from the site will be documented in a final environmental construction documentation report. The impacted soil area proposed to be excavated and handled via off-site disposal is shown on **Figure 4**.

These contaminated soils, which cannot be replaced into the excavation, will be taken to a predetermined licensed landfill facility for disposal. Waste profiles which provide required documentation on waste characteristics will be completed prior to construction, based on the requirements of the receiving landfill. Impacted soils will be transported by a licensed waste hauler in accordance with WAC NR 502.06 and applicable Wisconsin Department of Transportation (WDOT) requirements.

Based upon the Phase II testing results discussed in Sections 6 and 7, Ramboll also identified an area of CVOC impacted groundwater extending approximately 2,000 feet along Sentry Drive in the area of the proposed Return Flow Pipeline. During construction, suspended solids entrained in contaminated groundwater will be removed and the water will be discharged to the Waukesha Clean Water Plant at specified locations with prior permission from and under the conditions identified by the Waukesha Clean Water Plant. As a courtesy, these activities will be communicated to the designated representative of the WDNR Bureau of Water Quality. The approximate area of impacted groundwater to be specially handled is displayed in **Figure 5**.



Tables



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Table 1 - Soil Analytical Data

12.57/12.58: Linde Gas LLC/AGA Gas, Inc. / O'Rourke Distributing Co.

309 Sentry Drive, Waukesha, Wisconsin/303 Sentry Drive, Waukesha, Wisconsin

Parameters: VOCs (µg/kg)				Methylene Chloride	Tetrachloroethene	Trichloroethene
Soil RCLs	Non-Industrial Direct Contact			61,800	33,000	1,300
	Industrial Direct Contact			1,150,000	145,000	8,410
	Groundwater Pathway			2.56	4.54	3.58
Sample ID	Soil Type	PID (ppm)	Sample Date			
LG-B-1 (4-5')	Gravelly Sand	0.4	10/12/2017	<18	<19	<10
LG-B-1 (13.5-14')	Gravelly Sand	0.9	10/12/2017	<15	<16	<8.9
LG-B-2 (2.5-3.5')	Clayey Silt	0.8	10/12/2017	<20	<22	<12
LG-B-2 (9-10')	Sand	0.8	10/12/2017	<18	<19	<10
LG-B-3 (4-5')	Clay	0.2	10/12/2017	<20	<22	<12
LG-B-3 (9-10')	Sandy Gravel	0.4	10/12/2017	<19	<20	<11
LG-B-4 (2-3')	Silty Clay	0.3	10/12/2017	<20	<22	<12
LG-B-4 (7.5-8.5')	Silty Clay	0.1	10/12/2017	<19	<21	<11
LG-B-5 (4-5')	Silty Sand	0.6	10/12/2017	<18	<19	<10
LG-B-5 (9-10')	Gravelly Sand	0.8	10/12/2017	<17	<19	<10
LG-B-6 (4-5')	Silt	1.6	10/12/2017	<18	190 C	<10
LG-B-6 (10-11')	Sand	2.3	10/12/2017	<19	950 C	<11
LG-B-7 (4-5')	Clayey Silt	1.4	10/12/2017	<19	<20	<11
LG-B-7 (8-9')	Gravelly Sand	1.1	10/12/2017	<16	<18	<9.6
LG-B-8 (3-4')	Gravelly Sand	3.1	4/19/2018	<25.0	<25.0	<25.0
LG-B-9 (5-6')	Silt	3.4	4/19/2018	<25.0	140 C	<25.0
LG-B-9 (10-11')	Gravelly Sand	4.9	4/19/2018	<25.0	557 C	<25.0
LG-B-10 (4-5')	Silty Clay	3.1	4/19/2018	<25.0	<25.0	<25.0
LG-B-10 (11-12')	Sand	5.4	4/19/2018	<25.0	934 C	<25.0
LG-B-11 (4-5')	Silty Clay	2.9	4/19/2018	<25.0	<25.0	<25.0
LG-B-11 (9-10')	Sand	2.9	4/19/2018	<25.0	117 C	<25.0
LG-B-12 (5-6')	Silty Clay	5.3	4/19/2018	<25.0	42.8 J C	<25.0
LG-B-12 (9-10')	Gravelly Sand	2.8	4/19/2018	<25.0	88.6 C	<25.0
LG-B-13 (2.5-3.5')	Silt	1.0	4/19/2018	<25.0	<25.0	<25.0
LG-B-14 (1-2')	Silty Clay	5.0	8/28/2018	38.3 J *	<25.0	<25.0
LG-B-14 (4-5')	Silty Clay	8.2	8/28/2018	<25.0	<25.0	<25.0
LG-B-14 (10-11')	Sand and Gravel	8.5	8/28/2018	30.4 J *	729 C	<25.0
LG-B-15 (1-2')	Topsoil	--	8/28/2018	66.8 J *	<25.0	<25.0
LG-B-15 (4-5')	Silty Clay	4.7	8/28/2018	79 *	<25.0	<25.0
LG-B-15 (10-11')	Sand and Gravel	7.6	8/28/2018	69.7 *	166 C	<25.0
LG-B-16 (1-2')	Silty Clay	5.1	8/28/2018	119 *	<25.0	<25.0
LG-B-16 (5-6')	Silty Clay	6.7	8/28/2018	40.3 J *	113 C	<25.0
LG-B-16 (10-11')	Sand and Gravel	5.5	8/28/2018	144 *	724 C	<25.0
LG-B-17 (1-2')	Silty Clay	4.0	8/28/2018	<25.0	<25.0	<25.0
LG-B-17 (4-5')	Silty Clay	7.2	8/28/2018	<25.0	<25.0	<25.0
LG-B-17 (10-11')	Sand	5.6	8/28/2018	<25.0	828 C	33.8 J C
TRIP BLANK	--	--	8/28/2018	45.2 J *	<25.0	<25.0

Notes:

Only detected VOCs are listed above.

VOCs = Volatile Organic Compounds

RCL = Residual Contaminant Level

PID = Photoionization Detector

ppm = parts per million

µg/kg = micrograms per kilogram

C Parameter exceeds NR 720 RCL for Groundwater Pathway.

J Parameter is present at an estimated concentration between the Method Detection Limit and Reporting Limit.

* Analyte was detected in the associated method blank and in eight of twelve soil samples in the August 28, 2018 sample delivery group.

Methylene chloride is not a contaminant of concern for the subject site and is therefore not flagged as a soil standard exceedance.

Table 2 - Groundwater Analytical Data
12.57/12.58: Linde Gas LLC/AGA Gas, Inc. / O'Rourke Distributing Co.
309 Sentry Drive, Waukesha, Wisconsin/303 Sentry Drive, Waukesha, Wisconsin

Parameters	NR 140 Standards		LG-B-1	LG-B-2	LG-B-3	LG-B-4	LG-B-5	LG-B-6	LG-B-7	Trip Blank	LG-B-8	LG-B-13	Trip Blank	LG-B-8	LG-B-13	Trip Blank
	ES	PAL	10/25/2017	10/25/2017	10/25/2017	10/25/2017	10/25/2017	10/25/2017	10/25/2017	10/25/2017	4/26/2018	4/26/2018	4/27/2018	8/22/2018	8/22/2018	8/22/2018
VOCs (µg/L)																
Bromodichloromethane	0.6	0.06	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	<0.23	1.8	<0.50	<0.50	0.79 J	<0.36	<0.36
Chloroform	6	0.6	<0.26	<0.26	<0.26	0.52 J	<0.26	<0.26	<0.26	0.47 J	2.9 J	<2.5	<2.5	<1.3	<1.3	<1.3
Chloromethane	30	3	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	0.84 J	1.9	<0.50	<2.2	<2.2	<2.2
Dibromochloromethane	60	6	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	<0.38	0.90 J	<0.50	<0.50	<2.6	<2.6	<2.6
cis-1,2-Dichloroethene	70	7	<0.25	<0.25	<0.25	<0.25	<0.25	0.56 J	<0.25	<0.25	<0.26	<0.26	<0.26	<0.27	<0.27	<0.27
Tetrachloroethene	5	0.5	1.9	1.0	<0.27	13	11	92	1.6	<0.27	<0.50	<0.50	<0.50	0.33 J	<0.33	<0.33
Trichloroethene	5	0.5	4.9	2.1	<0.30	8.7	10	9.0	<0.30	<0.30	<0.33	<0.33	<0.50	<0.26	<0.26	<0.26

Notes:

Only detected VOCs are listed above.

VOCs = Volatile Organic Compounds

µg/L = micrograms per Liter

ES = Enforcement Standard

PAL = Preventive Action Limit

Italic value = NR 140 PAL Exceedance

J = Estimated concentration above the adjusted method detection limit and below the adjusted



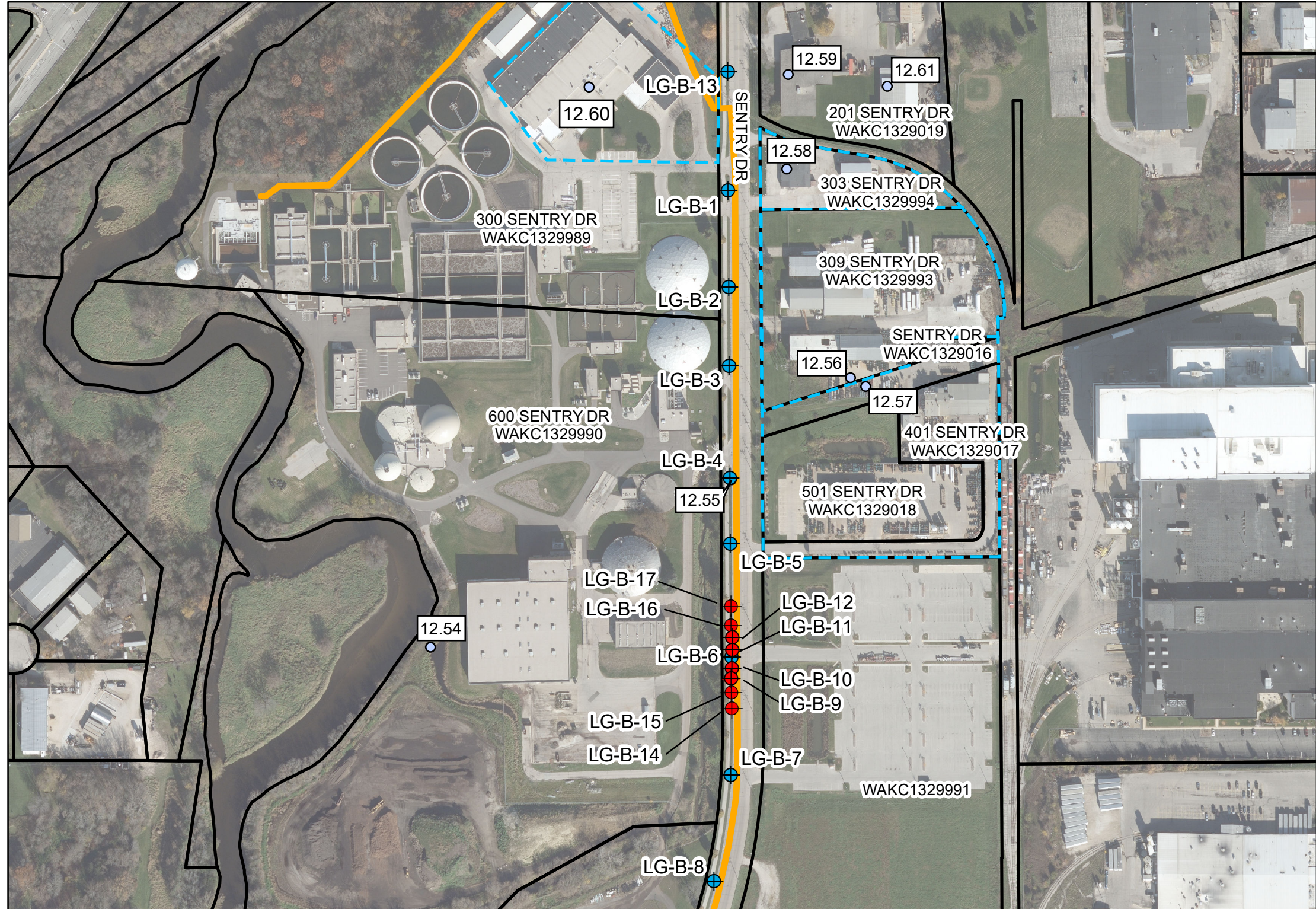
Figures



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FIGURE NO. 1

Aerials provided by Greeley and Hansen on January 26, 2018.
Milwaukee aerials were last updated December 14, 2017.
Waukesha aerials were last updated November 15, 2016.



Legend

- Ramboll Soil Boring Location
- Ramboll Soil Boring and Temporary Monitoring Well Location
- Listed Environmental Site
- BRRTS Boundary
- Parcel Boundary
- Return Flow Pipeline Route Alternative 3

1" = 275'

0 100 200 400 600 800

Parcel and address information acquired from Waukesha County.

GREAT WATER ALLIANCE™

Waukesha Water Utility
SERVING WAUKESHA SINCE 1886

GREELEY AND HANSEN
741 N. Grand Avenue, Suite 308
Waukesha, Wisconsin 53186

RAMBOLL
175 N. Corporate Drive, Suite 160
Brookfield, Wisconsin 53045

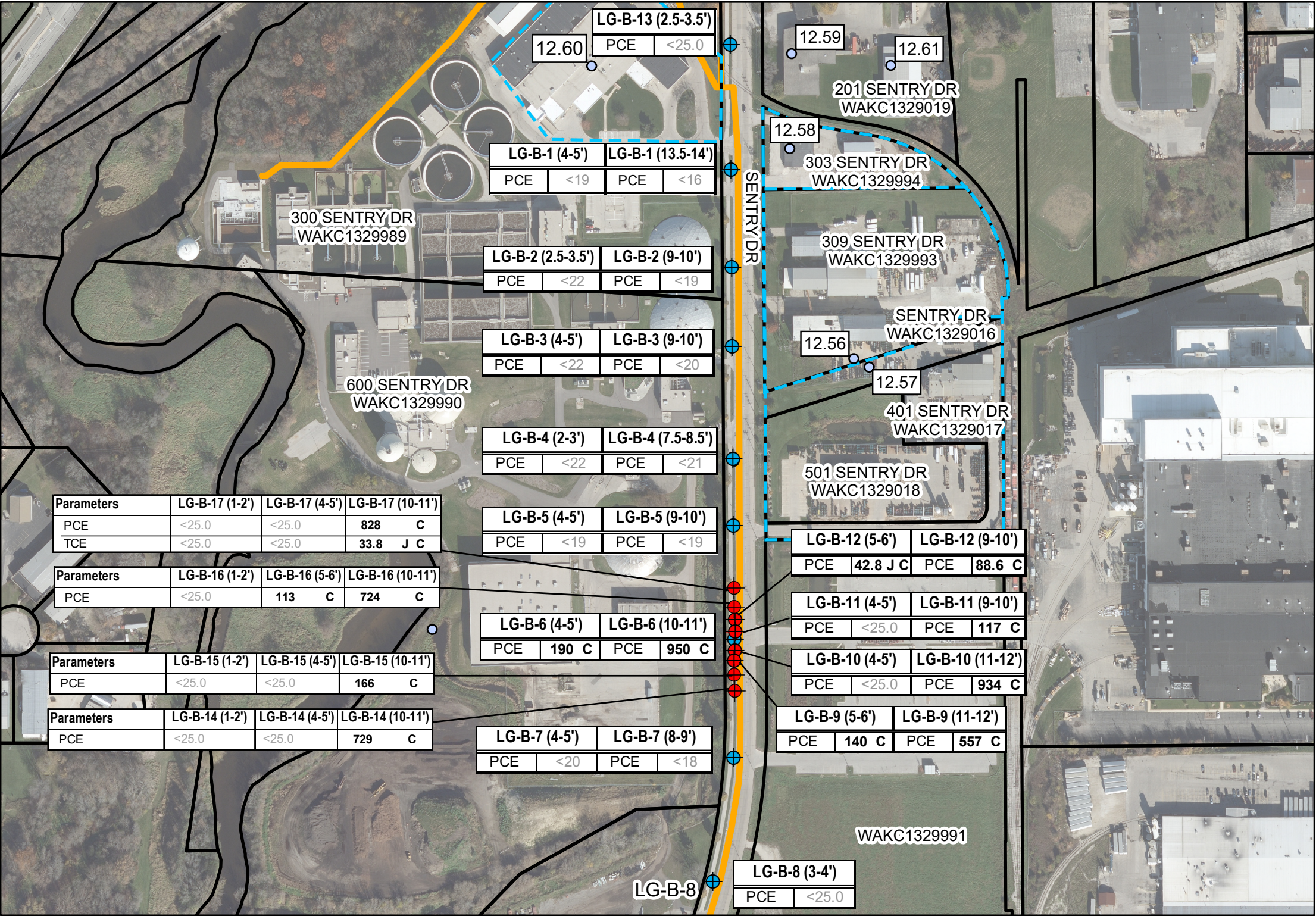
Waukesha, Wisconsin
Great Lakes Water Supply Program
Sample Location Map - Sites 12.57 and 12.58
Linde Gas LLC / AGA Gas, Inc. and O'Rourke Distributing Co
Date: 1/14/2019

Plotted: 1/14/2019
Document Path: M:\Client Project Files\21-41365B Waukesha Water Utility-Phase II\Task 4-Route Study\GISMXD\Phase II Figures\Site 12.57 and 12.58\Draft_12.57 and 12.58_Sample Locations_20180627.mxd

(NO TEXT FOR THIS PAGE)

Aerials provided by Greeley and Hansen on January 26, 2018.
Milwaukee aerials were last updated December 14, 2017.
Waukesha aerials were last updated November 15, 2016.

FIGURE NO. 2



Legend

- Ramboll Soil Boring Location
- Ramboll Soil Boring and Temporary Monitoring Well Location
- Listed Environmental Site
- BRRTS Boundary
- Parcel Boundary
- Return Flow Pipeline Route Alternative 3

Parameters	Soil RCLs		
	Non-Industrial Direct Contact	Industrial Direct Contact	Groundwater Pathway
VOCs (µg/kg)			
Methylene chloride	61,800	1,150,000	2.56
PCE	33,000	145,000	4.54
TCE	1,300	8,410	3.6

Notes:

Only detected VOCs are shown.

VOCs = Volatile Organic Compounds

RCL = Residual Contaminant Level

BT V = Background Threshold Value

µg/kg = micrograms per kilogram

C Parameter exceeds NR 720 RCL for Groundwater Pathway.

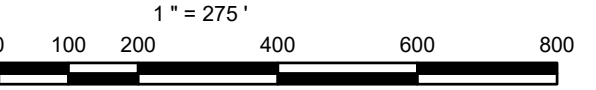
J Parameter is present at an estimated concentration between the Method Detection Limit and Reporting Limit.

-- No RCL or Surficial BT V established.

TCE Trichloroethene

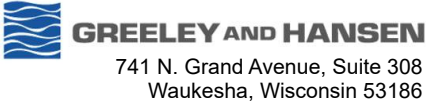
PCE Tetrachloroethene

Methylene chloride was detected in soil samples LG-B-14, LG-B-15, and LG-B-16, as well as in the associated trip blank. Since methylene chloride is a common lab contaminant and the sample results are likely due to lab contamination, the methylene chloride results are not displayed in the figure.



Parcel and address information acquired from Waukesha County.

Plotted: 1/14/2019
Document Path: M:\Client Project Files\21-41365B Waukesha Water Utility-Phase II Task 4-Route Study\GIS\Map\Phase II Figures\Site 12.57 and 12.58\Draft_12.57 and 12.58\Soil Detections_20180928.mxd

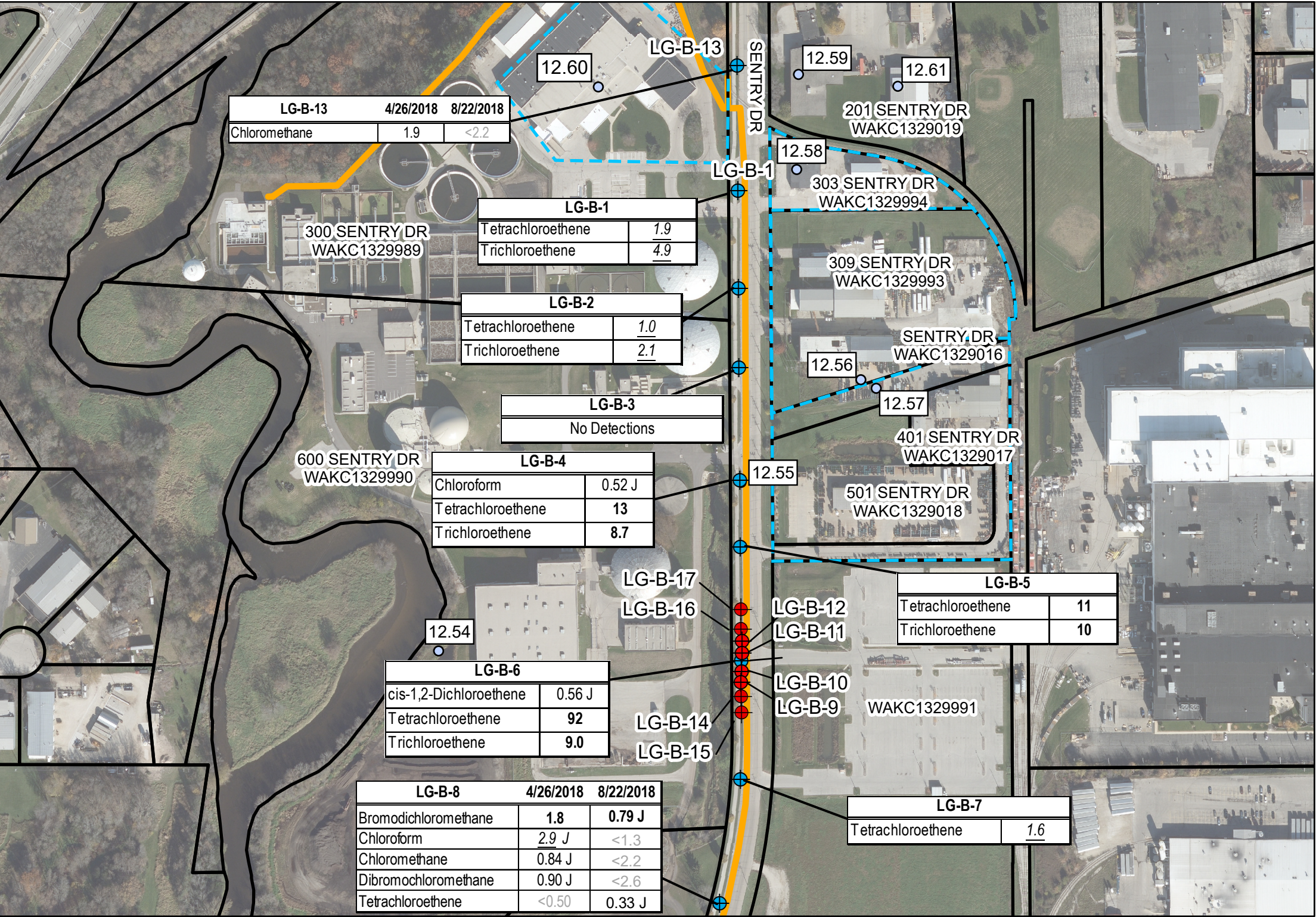


Waukesha, Wisconsin
Great Lakes Water Supply Program
VOC Detections in Soil for Sites 12.57 and 12.58
Linde Gas LLC / AGA Gas, Inc. and O'Rourke Distributing Co
Date: 1/14/2019

(NO TEXT FOR THIS PAGE)

FIGURE NO. 3

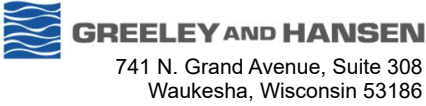
Aerials provided by Greeley and Hansen on January 26, 2018.
Milwaukee aerials were last updated December 14, 2017.
Waukesha aerials were last updated November 15, 2016.



Parcel and address information acquired from Waukesha County.

Waukesha, Wisconsin
Great Lakes Water Supply Program
VOC Detections in Groundwater for Sites 12.57 and 12.58
Linde Gas LLC / AGA Gas, Inc. and O'Rourke Distributing Co
Date: 1/14/2019

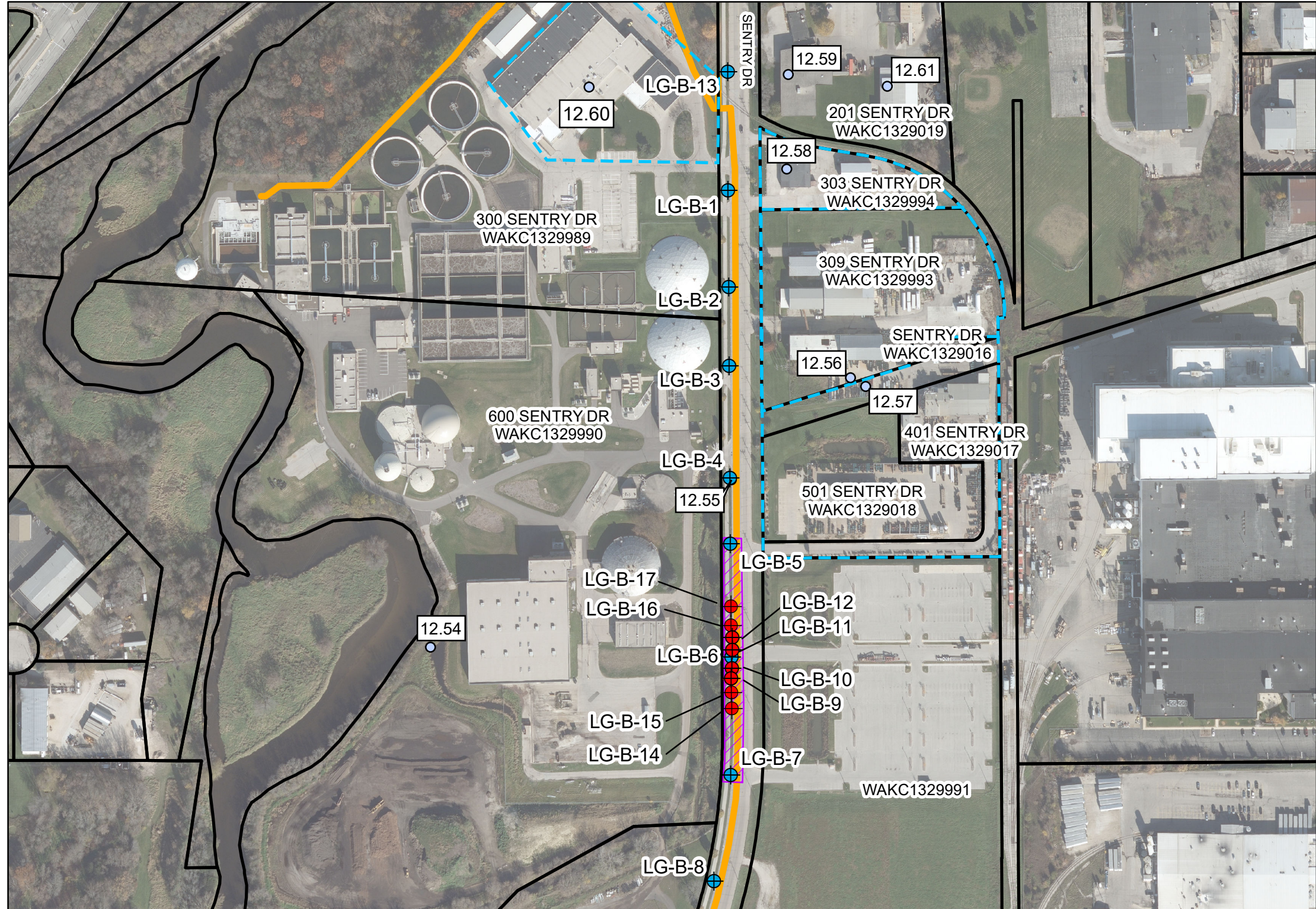
Plotted: 1/14/2019
Document Path: M:\Client Project Files\21-41365B Waukesha Water Utility-Phase II Task 4-Route Study\GISMXD\Phase II Figures\Site 12.57 and 12.58\Draft_12.57 and 12.58 Groundwater Detections_20181003.mxd



(NO TEXT FOR THIS PAGE)

FIGURE NO. 4

Aerials provided by Greeley and Hansen on January 26, 2018.
Milwaukee aerials were last updated December 14, 2017.
Waukesha aerials were last updated November 15, 2016.



Legend

- Ramboll Soil Boring Location
- Ramboll Soil Boring and Temporary Monitoring Well Location
- Listed Environmental Site
- BRRTS Boundary
- Parcel Boundary
- Special Handling Area
- Return Flow Pipeline Route Alternative 3

1" = 275'

0 100 200 400 600 800

Parcel and address information acquired from Waukesha County.

GREAT WATER ALLIANCE™

Waukesha Water Utility
SERVING WAUKESHA SINCE 1886

GREELEY AND HANSEN
741 N. Grand Avenue, Suite 308
Waukesha, Wisconsin 53186

RAMBOLL
175 N. Corporate Drive, Suite 160
Brookfield, Wisconsin 53045

Waukesha, Wisconsin
Great Lakes Water Supply Program
Soil Area to be Specially Handled - Sites 12.57 and 12.58
Linde Gas LLC / AGA Gas, Inc. and O'Rourke Distributing Co
Date: 1/14/2019

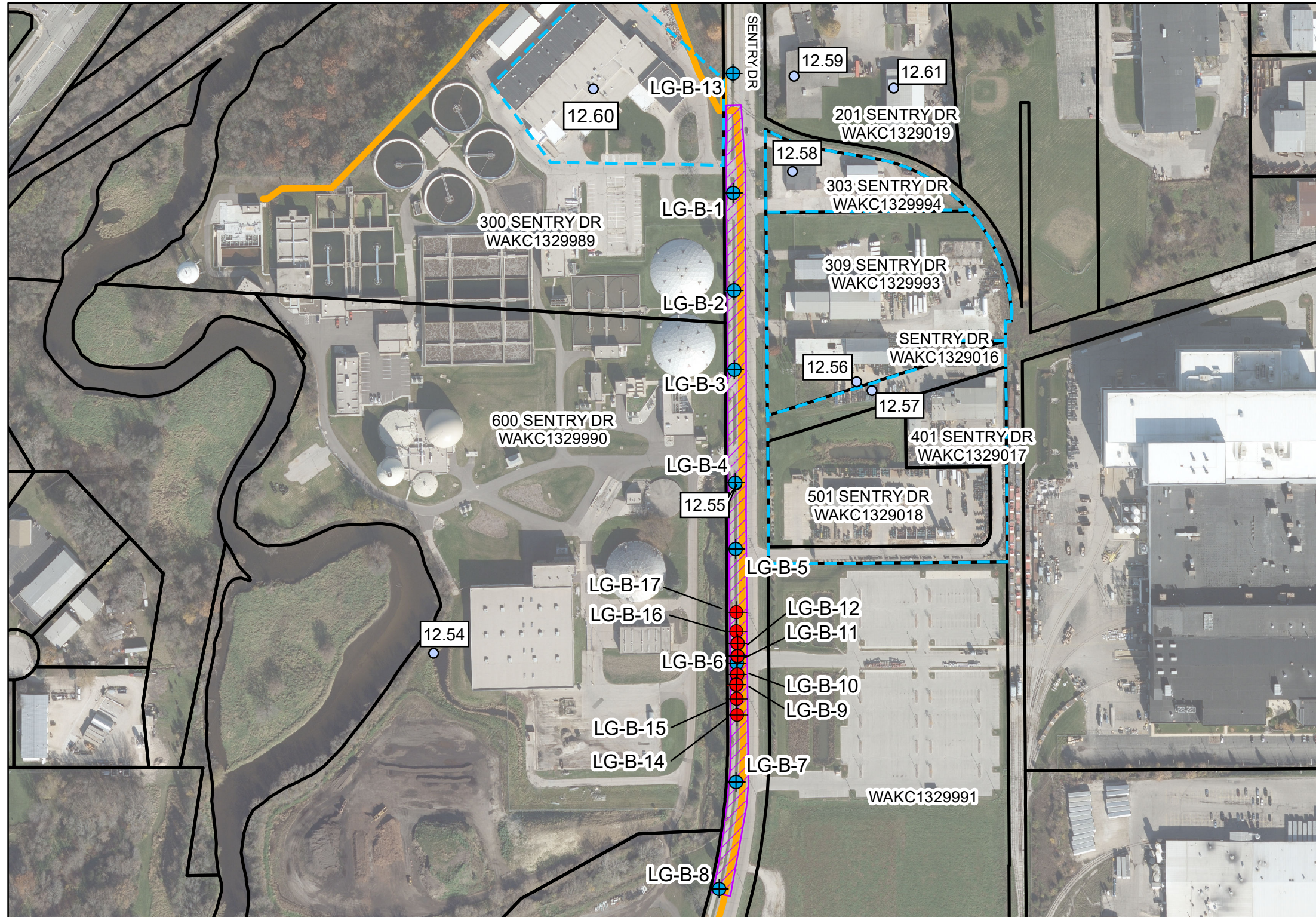
Plotted: 1/14/2019
Document Path: M:\Client Project Files\21-41365B Waukesha Water Utility-Phase II\Task 4-Route Study\GISMXD\Phase II Figures\Site 12.57 and 12.58\Draft_12.57 and 12.58_Soil Special Handling Area_20191112.mxd

(NO TEXT FOR THIS PAGE)

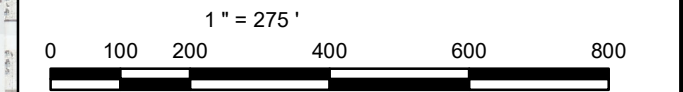
Plotted: 1/14/2019
Document Path: M:\Client Project Files\21-41365B Waukesha Water Utility-Phase II\Task 4-Route Study\GISMXD\Phase II Figures\Site 12.57 and 12.58\Draft_12.57 and 12.58\Groundwater Special Handling Area_20191112.mxd

Aerials provided by Greeley and Hansen on January 26, 2018.
Milwaukee aerials were last updated December 14, 2017.
Waukesha aerials were last updated November 15, 2016.

FIGURE NO. 5



- Legend**
- Ramboll Soil Boring Location
 - Ramboll Soil Boring and Temporary Monitoring Well Location
 - Listed Environmental Site
 - BRRTS Boundary
 - Parcel Boundary
 - Special Handling Area
 - Return Flow Pipeline Route Alternative 3



Parcel and address information acquired from Waukesha County.

Waukesha, Wisconsin
Great Lakes Water Supply Program
Groundwater Area to be Specially Handled - Sites 12.57 and 12.58
Linde Gas LLC / AGA Gas, Inc. and O'Rourke Distributing Co
Date: 1/14/2019



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Appendix A – Soil Boring Logs and Abandonment Forms



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Page 1 of 1

Facility ID	County	County Code	Civil Town/City/ or Village
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I hereby certify that the information on this form is true and correct to the best of my knowledge.			
Signature	Firm	Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Page 1 of 1

Facility ID	County	County Code	Civil Town/City/ or Village
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I hereby certify that the information on this form is true and correct to the best of my knowledge.		
Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079

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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-3	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 10/12/2017		Date Drilling Completed 10/12/2017	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation 799.5 Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 368944 N 2468401 E S/C/N			Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section , T N, R			Lat _____ ' _____" Long _____ ' _____"		

Facility ID	County	County Code	Civil Town/City/ or Village
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Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 48		1.5	TOPSOIL FILL: Gravelly clay, trace silt, brownish black, dry.				0.1						
			3.0					0.3						
			4.5	FILL: Clay, trace sand, trace gravel, dark brown, moist at 3.5 ft.				0.2						
2 CS	60 42		6.0					0.3						
			7.5	SANDY GRAVEL, tan and white, moist to wet.				0.4						
			9.0					0.3						
3 CS	60 48		10.5					0.3						
			12.0					0.4						
			13.5					0.3						
4 CS	60 36		15.0					0.3						
			16.5					0.3						
			18.0	End of boring at 18 ft. Temporary monitoring well installed.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-4	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 10/12/2017		Date Drilling Completed 10/12/2017	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation 798.3 Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 368674 N 2468403 E S/C/N			Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section , T N, R			Lat _____ ' _____" Long _____ ' _____"		

Facility ID	County	County Code	Civil Town/City/ or Village
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Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60			TOPSOIL										
			1.5	FILL: Gravelly sand, tannish brown.				0.2						
			3.0	FILL: Silty clay, some sand, some gravel, brownish black, moist, sand and gravel increase with depth.				0.3						
2 CS	60		4.5					0.3						
			6.0					0.1						
			7.5					0.1						
			9.0	FILL: Gravelly sand, tannish brown, wet.				0.3						
3 CS	60		10.5	FILL: Silty clay, trace gravel, brown, wet.				0.1						
			12.0	SANDY GRAVEL, tannish brown, wet.				0.5						
			13.5					0.2						
4 CS	36		15.0	Sand seam at 15.5 ft.	GW			0.2						
			16.5					0.3						
			18.0	End of boring at 18 ft. Temporary monitoring well installed.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-5	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 10/12/2017		Date Drilling Completed 10/12/2017	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation 799.0 Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 368514 N 2468404 E S/C/N 1/4 of T N, R			Local Grid Location Lat ° ' " Long ° ' " Feet <input type="checkbox"/> N <input type="checkbox"/> E Feet <input type="checkbox"/> S <input type="checkbox"/> W		
Facility ID		County	County Code	Civil Town/City/ or Village	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 30		1.5	TOPSOIL				0.2						
			3.0	FILL: Silty sand, some clay, brownish tan, blackish red clay.				0.5						
			4.5					0.6						
2 CS	60 60		6.0	FILL: Clayey silt, trace sand, trace gravel, grayish black.				0.8						
			7.5					0.4						
			9.0	FILL: Sand, tan, moist, fine to medium grained.				0.5						
			10.5	FILL: Silty clay, brownish black.	SP			0.8						
3 CS	60 48		12.0	GRAVELLY SAND, tan, wet.	SP			0.8						
			13.5	SAND, some clay, wet, fine grained.	SP			1.0						
			15.0	GRAVELLY SAND, tan, medium to coarse grained.	SP			1.5						
			16.5	SANDY GRAVEL, wet.				0.9						
4 CS	36 36		18.0	End of boring at 18 ft. Temporary monitoring well installed.	GW									

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-6	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 10/12/2017		Date Drilling Completed 10/12/2017	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation 800.5 Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 368240 N 2468406 E S/C/N 1/4 of T N, R			Local Grid Location Lat ° ' " Long ° ' " Feet <input type="checkbox"/> N <input type="checkbox"/> E Feet <input type="checkbox"/> S <input type="checkbox"/> W		
Facility ID		County	County Code	Civil Town/City/ or Village	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 48			TOPSOIL				0.3						
			1.5	FILL: Silt, trace gravel, dark brown.				0.6						
			3.0	FILL: Silt, trace clay, trace gravel, brown.				1.6						
2 CS	60 36		4.5	FILL: Pea gravel.										
			6.0											
			7.5	FILL: Silty clay, trace gravel, brown.				0.7						
3 CS	60 48		9.0	GRAVELLY SAND, tannish brown, moist.	SP			0.7						
			10.5	SAND, tan to brown, wet, fine grained.				1.3						
			12.0		SP			2.3						
4 CS	36 36		13.5					0.6						
			15.0	GRAVELLY SAND, tan, wet.	SP			1.3						
			16.5					0.8						
			18.0	End of boring at 18 ft. Temporary monitoring well installed.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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Page 1 of 1

Facility ID	County	County Code	Civil Town/City/ or Village
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Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 42		1.5	<u>TOPSOIL</u>				0.8						
		3.0	<u>FILL:</u> Gravelly silt, dark brown, dry.					1.4						
		4.5	<u>FILL:</u> Clayey silt, dark brown.					1.4						
2 CS	60 36		6.0	<u>FILL:</u> Sand, trace gravel, tan, fine to medium grained.				0.8						
		7.5	<u>FILL:</u> Clay, some silt, brown.					1.0						
		9.0	<u>GRAVELLY SAND,</u> tan, moist to wet.					1.1						
3 CS	60 48		10.5		SP			1.1						
		12.0												
		13.5							0.8					
4 CS	36 36		15.0	<u>SAND,</u> tan, coarse grained.	SP			0.5						
		16.5												
		18.0	End of boring at 18 ft. Temporary monitoring well installed.						1.2					

Signature	Firm	Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-8	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 4/19/2018		Date Drilling Completed 4/19/2018	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane N E S/C/N			Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section , T N, R			Lat _____ ' _____" Long _____ ' _____"		

Facility ID	County	County Code	Civil Town/City/ or Village
-------------	--------	-------------	-----------------------------

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 24		1.5	TOPSOIL										
			3.0	FILL: Sand and gravel, tan.				3.1						
2 CS	60 24		4.5					4.3						
			6.0	FILL: Sand, tan, moist.				2.4						
			7.5											
			9.0											
3 CS	60 48		10.5	FILL: Silt, tan, wet.				4.2						
			12.0	SAND, tan, wet.										
			13.5		SP			3.6						
			15.0	End of boring at 15ft. Temporary monitoring well installed.										Water level 10ft. at time of drilling

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-9	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 4/19/2018		Date Drilling Completed 4/19/2018	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane N E S / C / N 1/4 of T 1/4 of Section N, R			Local Grid Location Lat ° ' " Long ° ' " Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		

Facility ID	County	County Code	Civil Town/City/ or Village
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Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 60			<u>Topsoil</u>										
			1.5	<u>FILL:</u> Silt with gravel and organic material, brown and black.	Fill									
			3.0											
			4.5											
2 CS	60 42			<u>FILL:</u> Silty clay, brown, moist, medium consistency, medium plasticity. Lense of pea gravel at 7ft.	Fill									
			6.0											
			7.5											
			9.0											
3 CS	60 42			<u>SAND AND GRAVEL</u> , tan, wet.	SP									
			10.5											
			12.0	<u>SANDY CLAY</u> , tan, wet.	CL									
			13.5											
			15.0	End of boring at 15ft.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-10	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 4/19/2018		Date Drilling Completed 4/19/2018	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane N E S/C/N			Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section T N, R			Lat ° ' " Long ° ' "		

Facility ID	County	County Code	Civil Town/City/ or Village
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Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
1 CS	60 36			TOPSOIL											Water level 8ft. at time of drilling.
			1.5	FILL: Silt with gravel and organic material, brown and black, dry, loose.	Fill										
			3.0												
			4.5	FILL: Silty clay, brown, moist, medium consistency, medium plasticity.											
2 CS	60 36		6.0		Fill										
			7.5	Pea gravel lense at 7ft.											
			9.0												
			10.5	SAND AND GRAVEL, tan, wet.	SP										
3 CS	60 36		12.0	SAND, tan, wet.	SP										
			13.5												
			15.0	End of boring at 15ft.											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-11	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 4/19/2018		Date Drilling Completed 4/19/2018	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane N E S/C/N			Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section T N, R			Lat ° ' " Long ° ' "		

Facility ID	County	County Code	Civil Town/City/ or Village
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Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
1 CS	60 36			<u>TOPSOIL</u>											Water level 7ft. at time of drilling.
			1.5	<u>FILL:</u> Silt with gravel and organic material, dark brown and black, dry, loose.	Fill			3.2							
			3.0												
			4.5	<u>FILL:</u> Silty clay, brown, moist, medium consistency, medium plasticity.	Fill			2.9							
2 CS	60 36		6.0					2.6							
			7.5	Lense of pea gravel at 7ft.											
				<u>SAND AND GRAVEL</u> , tan, wet.				2.8							
			9.0												
			10.5		SP										
			12.0												
			13.5					2.9							
3 CS	60 36		15.0	End of boring at 15ft.											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-12	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 4/19/2018		Date Drilling Completed 4/19/2018	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane N E S/C/N 1/4 of T 1/4 of Section N, R			Local Grid Location Lat ° ' " Long ° ' " Feet <input type="checkbox"/> N <input type="checkbox"/> E Feet <input type="checkbox"/> S <input type="checkbox"/> W		

Facility ID	County	County Code	Civil Town/City/ or Village
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Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 60		1.5	TOPSOIL				3.9						
			3.0	FILL: Silt with organic material and trace amounts of fine grained sand, dark brown, dry.	Fill			2.8						
			4.5	FILL: Silty clay, light brown, moist, soft, medium plasticity.	Fill			4.2						
2 CS	60 36		6.0	FILL: Pea gravel.	Fill			5.3						
			7.5	SAND AND GRAVEL, tan, wet at 10ft.				3.9						
			9.0					2.8						
3 CS	60 36		10.5		SP									
			12.0											
			13.5											
			15.0	End of boring at 15ft.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.










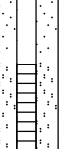
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-13	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 4/19/2018		Date Drilling Completed 4/19/2018	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane N E S / C / N			Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section T N, R			Lat ° ' " Long ° ' "		
Facility ID		County	County Code	Civil Town/City/ or Village	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 48		2	<u>TOPSOIL</u> <u>FILL:</u> Silt and organic material, dark brown, dry, loose.	Fill			1.0						
2 CS	60 36		4	<u>SAND AND GRAVEL</u> , possibly fill, tan, dry, loose.				1.3						
			6					1.3						
			8	Lense of crushed white gravel approximately 2 in. thick.	GW			1.1						
			10	Lense of crushed white gravel approximately 2 in. thick.	GW			2.0						
3 CS	60 36		12											
			14		SP			1.4						
4 CS	60 36		16											
			18											
			20	Wet at 19ft.										
			22	End of boring at 22ft. Temporary monitoring well installed.										
														Water level 19ft. at time of drilling.

I hereby certify that the information on this form is true and correct to the best of my knowledge.











Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-14	
Boring Drilled By: Name of crew chief (first, last) and Firm Gage Kapugi On-Site Environmental		Date Drilling Started 8/28/2018		Date Drilling Completed 8/28/2018	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane N E S/C/N			Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section T N, R			Lat ° ' " Long ° ' "		
Facility ID		County	County Code	Civil Town/City/ or Village	

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 60			TOPSOIL										Water level 10 ft. at time of drilling.
			1.5	FILL: Silty clay, trace gravel, trace organic material, sand increases with depth, dark brown, dry to moist.				5.0						
			3.0					8.2						
			4.5		Fill			4.9						
2 CS	60 48		6.0					5.2						
			7.5					6.0						
			9.0	FILL: Silty clay, trace gravel, brown, moist.	Fill									
			10.5	FILL: Sandy silt, some clay, tan, moist.	Fill									
3 CS	60 48		12.0	SAND: some fine grained gravel, trace silt, tan, moist to wet.				8.1						
			13.5		SP			8.5						
			15.0	End of boring at 15 ft.				9.8						

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-15	
Boring Drilled By: Name of crew chief (first, last) and Firm Gage Kapugi On-Site Environmental		Date Drilling Started 8/28/2018		Date Drilling Completed 8/28/2018	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane N E S / C / N			Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section T N, R			Lat ° ' " Long ° ' "		

Facility ID				County			County Code		Civil Town/City/ or Village							
Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties						RQD/ Comments	
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200			
1 CS	60 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I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-16	
Boring Drilled By: Name of crew chief (first, last) and Firm Gage Kapugi On-Site Environmental		Date Drilling Started 8/28/2018		Date Drilling Completed 8/28/2018	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane N E S/C/N			Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section T N, R			Lat ° ' " Long ° ' "		
Facility ID		County	County Code	Civil Town/City/ or Village	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 54		1.5	TOPSOIL FILL: Silty clay, some sand and gravel, trace organic material, small pieces of scrap material present, dark brown, dry to moist.										
			3.0					5.1						
			4.5		Fill									
2 CS	60 48		6.0					4.7						
			7.5	FILL: Sand and fine to medium grained gravel, tan, moist. Silty clay lense at 8 ft.	Fill			6.7						
			9.0					5.1						
3 CS	60 60		10.5	SAND AND GRAVEL, some silt, tan, wet.	SP			5.5 4.7						
			12.0	SILTY SAND, trace gravel, tan, wet.	SM									
			13.5	SAND AND GRAVEL, tan, wet, gravel is fine to medium grained.	SP			5.1						
			15.0	End of boring at 15 ft.				5.3						
														Water level at 10.5 ft. at time of drilling.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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









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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Page 1 of 1

Facility/Project Name Great Water Alliance, Site # 12.57/12.58		License/Permit/Monitoring Number N/A		Boring Number LG-B-17	
Boring Drilled By: Name of crew chief (first, last) and Firm Tony Kapugi On-Site Environmental		Date Drilling Started 8/28/2018		Date Drilling Completed 8/28/2018	
Drilling Method Direct Push					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane N E S/C/N			Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of Section T N, R			Lat _____ ' _____" Long _____ ' _____"		

Facility ID	County	County Code	Civil Town/City/ or Village
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Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
1 CS	60 52			<u>TOPSOIL</u>											
			1.5	<u>FILL:</u> Silty clay, trace gravel, trace organic material, dark brown.				4.0							
			3.0	<u>FILL:</u> Sand and gravel, some clay, tan, moist.				4.2							
			4.5	<u>FILL:</u> Silty clay, trace gravel, dark brown to brown, moist.				7.2							
2 CS	60 48		6.0	<u>SILTY SAND,</u> trace gravel, tan, wet.				7.3							
			7.5		SM			6.9							
			9.0					4.4							
			10.5					5.6							
3 CS	60 60		12.0	<u>SAND AND GRAVEL,</u> tan, wet, gravel is fine to medium grained.	SP			7.8							
			13.5												
			15.0	End of boring at 15 ft.				6.4							
															Water level 10.5 ft. at time of drilling.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm Ramboll US Corporation 175 N. Corporate Drive, Suite 160 Brookfield, WI 53045	Tel: (262) 901-0094 Fax: (262) 901-0079
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Facility/Project Name: Waukesha Water Utility		Local Grid Location of Well <input type="checkbox"/> N. <input type="checkbox"/> E. ft. <input type="checkbox"/> S. ft. <input type="checkbox"/> W.		Well Name: LG-B-1	
License/Permit/Monitoring Number		Local Grid Origin <input type="checkbox"/> (estimated <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. _____ ' _____ " Long. _____ ° _____ ' _____ "		Wis. Unique Well No. _____ DNR Well ID No _____	
Facility ID		St. Plane 369368.42 ft. N. 2468398.039 ft. E. S/C/N		Date Well Installed 1 0 / 1 2 / 2 0 1 7 m m d d y y y y	
Type of Well Well Code _____ / _____		Section Location of Waste/Source <input type="checkbox"/> E 1/4 of 1/4 of Sec. _____, T. _____ N, R. <input type="checkbox"/> W		Well Installed By: Name (first, last) and Firm Tony Kapugi, Onsite Environmental	
Distance from Waste/Source _____ ft.	Enf. Stds. Apply <input type="checkbox"/>	Location of Well Relative to Waste/Source u Upgradient s Sidegradient d Downgradient Not Known		Gov. Lot Number _____	

A. Protective Pipe, top elevation _____ ft. MSL	1. Cap and lock? Cap, no lock
B. Well Casing, top elevation _____ ft. MSL	2. Protective cover pipe: Yes
	a. Inside Diameter: 7 in.
	b. Length: 10 in.
	c. Material: Cast Iron
	Other _____
C. Land surface elevation 803.281 ft. MSL	d. Additional protection? Yes
	If yes, describe: Bolted flush-mount cap
D. Surface seal, bottom _____ ft. MSL or _____ ft.	3. Surface seal: Bentonite Yes
	Other: _____
12. USCS classification of soil near screen: GP GM GC GW SW SP SM SC ML MH CL CH Bedrock	4. Material between well casing and protective pipe: Bentonite No
13. Sieve analysis performed? Yes No	Other _____
14. Drilling method used: Rotary 50	5. Annular space seal: a. Granular/Chipped Bentonite Yes 33
Hollow Stem Auger 41	b. Lbs/gal mud weight.... Bentonite-sand slurry No
Geoprobe Other	c. Lbs/gal mud weight.... Bentonite slurry No
15. Drilling fluid used: Water 0 2 Air 0 1	d. _____% Bentonite... Bentonite-cement grout No
Drilling Mud 0 3 None 9	e. _____ ft3 volume added for any of the above No
16. Drilling additives used? Yes No	f. How installed: Tremie No
Describe _____	Tremie pumped No
17. Source of water (attach analysis, if required)	Gravity No
E. Bentonite seal, top _____ ft. MSL or 1.0 ft.	6. Bentonite seal: a. Bentonite granules Yes 33
F. Fine sand, top _____ ft. MSL or 6.0 ft.	b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips No
G. Filter pack, top _____ ft. MSL or 6.0 ft.	c. _____ Other No
H. Screen joint, top _____ ft. MSL or 8.0 ft.	7. Fine sand material: Manufacturer, product name & mesh size
I. Well bottom _____ ft. MSL or 18.0 ft.	a. None Used No
J. Filter pack, bottom _____ ft. MSL or 18.0 ft.	b. Volume added _____ ft3
K. Borehole, bottom _____ ft. MSL or 18.0 ft.	8. Filter pack material: Manufacturer, product name & mesh size
L. Borehole, diameter 2.75 in.	a. Red Flint #40
M. O.D. well casing 1.25 in.	b. Volume added: 0.2 ft3
N. I.D. well casing 1.00 in.	9. Well casing: Flush threaded PVC schedule 40 Yes 23
	Flush threaded PVC schedule 80 No
	Other No
	10. Screen material: PVC
	a. Screen type: Factory cut Yes 11
	Continuous slot Yes 01
	Other No
	b. Manufacturer: Monoflex
	c. Slot size: 0.010 in
	d. Slotted length: 10 ft.
	11. Backfill material (below filter pack): No

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Tyler Bengtson

Firm

Ramboll

Facility/Project Name: Waukesha Water Utility		Local Grid Location of Well <input type="checkbox"/> N. <input type="checkbox"/> E. ft. <input type="checkbox"/> S. ft. <input type="checkbox"/> W.		Well Name: LG-B-2	
License/Permit/Monitoring Number		Local Grid Origin <input type="checkbox"/> (estimated <input type="checkbox"/> or Well Location <input type="checkbox"/> Lat. _____ ' _____ " Long. _____ ° _____ ' _____ "		Wis. Unique Well No. _____ DNR Well ID No. _____	
Facility ID		St. Plane 369134.096 ft. N. 2468400.002 ft. E. S/C/N		Date Well Installed 1 0 / 1 2 / 2 0 1 7 m m d d y y y y	
Type of Well Well Code _____ / _____		Section Location of Waste/Source <input type="checkbox"/> E 1/4 of 1/4 of Sec. _____, T. _____ N, R. <input type="checkbox"/> W		Well Installed By: Name (first, last) and Firm Tony Kapugi, Onsite Environmental	
Distance from Waste/Source _____ ft.		Enf. Stds. Apply <input type="checkbox"/>		Location of Well Relative to Waste/Source u Upgradient s Sidegradient d Downgradient Not Known	

A. Protective Pipe, top elevation _____ ft. MSL	1. Cap and lock? Cap, no lock
B. Well Casing, top elevation _____ ft. MSL	2. Protective cover pipe: a. Inside Diameter: 7 in. b. Length: 10 in. c. Material: Cast Iron Other _____
C. Land surface elevation 801.367 ft. MSL	d. Additional protection? If yes, describe: Bolted flush-mount cap Yes
D. Surface seal, bottom _____ ft. MSL or _____ ft.	3. Surface seal: Bentonite Yes Other: _____
12. USCS classification of soil near screen: GP GM GC GW SW SP SM SC ML MH CL CH Bedrock	4. Material between well casing and protective pipe: Bentonite No Other _____
13. Sieve analysis performed? Yes No	5. Annular space seal: a. Granular/Chipped Bentonite Yes 33
14. Drilling method used: Rotary 50 Hollow Stem Auger 41 Geoprobe Other	b. Lbs/gal mud weight.... Bentonite-sand slurry No c. Lbs/gal mud weight.... Bentonite slurry No d. _____% Bentonite... Bentonite-cement grout No e. _____ft ³ volume added for any of the above No f. How installed: Tremie No Tremie pumped No Gravity No
15. Drilling fluid used: Water 0 2 Air 0 1 Drilling Mud 0 3 None 9	6. Bentonite seal: a. Bentonite granules Yes 33 b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips No c. _____ Other No
16. Drilling additives used? Yes No Describe _____	7. Fine sand material: Manufacturer, product name & mesh size a. None Used No b. Volume added _____ft ³
17. Source of water (attach analysis, if required) _____	8. Filter pack material: Manufacturer, product name & mesh size a. Red Flint #40 b. Volume added: 0.2 ft ³
E. Bentonite seal, top _____ ft. MSL or 0.5 ft.	9. Well casing: Flush threaded PVC schedule 40 Yes 23 Flush threaded PVC schedule 80 No Other No
F. Fine sand, top _____ ft. MSL or 3.5 ft.	10. Screen material: PVC a. Screen type: Factory cut Yes 11 Continuous slot Yes 01 Other No
G. Filter pack, top _____ ft. MSL or 3.5 ft.	b. Manufacturer: Monoflex c. Slot size: 0.010 in
H. Screen joint, top _____ ft. MSL or 6.5 ft.	d. Slotted length: 10 ft.
I. Well bottom _____ ft. MSL or 16.0 ft.	11. Backfill material (below filter pack): Sand
J. Filter pack, bottom _____ ft. MSL or 16.0 ft.	
K. Borehole, bottom _____ ft. MSL or 18.0 ft.	
L. Borehole, diameter 2.75 in.	
M. O.D. well casing 1.25 in.	
N. I.D. well casing 1.00 in.	

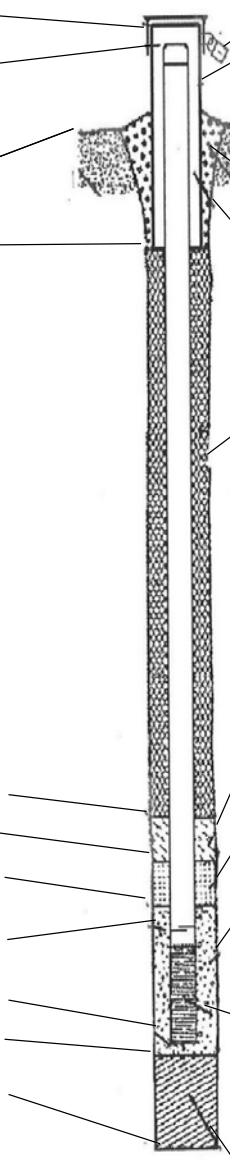
I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Tyler Bengtson

Firm

Ramboll

Facility/Project Name: Waukesha Water Utility		Local Grid Location of Well <input type="checkbox"/> N. <input type="checkbox"/> E. ft. <input type="checkbox"/> S. ft. <input type="checkbox"/> W.		Well Name: LG-B-3	
License/Permit/Monitoring Number		Local Grid Origin <input type="checkbox"/> (estimated <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. _____ ' _____ " Long. _____ ° _____ ' _____ "		Wis. Unique Well No. _____ DNR Well ID No. _____	
Facility ID		St. Plane 368944.352 ft. N. 2468400.605 ft. E. S/C/N		Date Well Installed 1 0 / 1 2 / 2 0 1 7 m m d d y y y y	
Type of Well Well Code _____ / _____		Section Location of Waste/Source <input type="checkbox"/> E 1/4 of 1/4 of Sec. _____, T. _____ N, R. <input type="checkbox"/> W		Well Installed By: Name (first, last) and Firm Tony Kapugi, Onsite Environmental	
Distance from Waste/Source _____ ft.		Enf. Stds. Apply <input type="checkbox"/>		Location of Well Relative to Waste/Source u Upgradient s Sidegradient d Downgradient Not Known	

A. Protective Pipe, top elevation _____ ft. MSL		1. Cap and lock? Cap, no lock	
B. Well Casing, top elevation _____ ft. MSL		2. Protective cover pipe: a. Inside Diameter: 7 in. b. Length: 10 in. c. Material: Cast Iron Other _____	
C. Land surface elevation 799.497 ft. MSL		d. Additional protection? If yes, describe: Bolted flush-mount cap	Yes
D. Surface seal, bottom _____ ft. MSL or _____ ft.		3. Surface seal: Bentonite Other: _____	Yes
12. USCS classification of soil near screen: GP GM GC GW SW SP SM SC ML MH CL CH Bedrock		4. Material between well casing and protective pipe: Bentonite Other _____	No
13. Sieve analysis performed? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		5. Annular space seal: a. Granular/Chipped Bentonite	Yes 33
14. Drilling method used: Rotary 50 Hollow Stem Auger 41 Geoprobe Other		b. Lbs/gal mud weight.... Bentonite-sand slurry	No
15. Drilling fluid used: Water 0 2 Air 0 1 Drilling Mud 0 3 None 9		c. Lbs/gal mud weight.... Bentonite slurry	No
16. Drilling additives used? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		d. _____% Bentonite... Bentonite-cement grout	No
Describe _____		e. _____ ft ³ volume added for any of the above	No
17. Source of water (attach analysis, if required) _____		f. How installed: Tremie Tremie pumped Gravity	No No No
E. Bentonite seal, top _____ ft. MSL or 0.5 ft.		6. Bentonite seal: a. Bentonite granules b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips c. _____ Other	Yes 33 No No
F. Fine sand, top _____ ft. MSL or 4.0 ft.		7. Fine sand material: Manufacturer, product name & mesh size a. None Used b. Volume added _____ ft ³	No No
G. Filter pack, top _____ ft. MSL or 4.0 ft.		8. Filter pack material: Manufacturer, product name & mesh size a. Red Flint #40 b. Volume added: 0.2 ft ³	
H. Screen joint, top _____ ft. MSL or 6.0 ft.		9. Well casing: Flush threaded PVC schedule 40 Flush threaded PVC schedule 80 Other	Yes 23 No No
I. Well bottom _____ ft. MSL or 16.0 ft.		10. Screen material: a. Screen type: PVC Factory cut Continuous slot Other	Yes 11 Yes 01 No
J. Filter pack, bottom _____ ft. MSL or 16.0 ft.		b. Manufacturer: Monoflex c. Slot size: 0.010 in.	
K. Borehole, bottom _____ ft. MSL or 18.0 ft.		d. Slotted length: 10 ft.	
L. Borehole, diameter 2.75 in.		11. Backfill material (below filter pack): Sand	
M. O.D. well casing 1.25 in.			
N. I.D. well casing 1.00 in.			

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Tyler Bengtson

Firm

Ramboll

Facility/Project Name: Waukesha Water Utility		Local Grid Location of Well <input type="checkbox"/> N. <input type="checkbox"/> E. ft. <input type="checkbox"/> S. ft. <input type="checkbox"/> W.		Well Name: LG-B-4	
License/Permit/Monitoring Number		Local Grid Origin <input type="checkbox"/> (estimated <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. _____ ' _____ " Long. _____ ° _____ ' _____ "		Wis. Unique Well No. _____ DNR Well ID No. _____	
Facility ID		St. Plane 368673.797 ft. N. 2468402.931 ft. E. S/C/N		Date Well Installed 1 0 / 1 2 / 2 0 1 7 m m d d y y y y	
Type of Well Well Code _____ / _____		Section Location of Waste/Source <input type="checkbox"/> E 1/4 of 1/4 of Sec. _____, T. _____ N, R. <input type="checkbox"/> W		Well Installed By: Name (first, last) and Firm Tony Kapugi, Onsite Environmental	
Distance from Waste/Source _____ ft.		Enf. Stds. Apply <input type="checkbox"/>		Location of Well Relative to Waste/Source u Upgradient s Sidegradient d Downgradient Not Known	

A. Protective Pipe, top elevation _____ ft. MSL	1. Cap and lock? Cap, no lock
B. Well Casing, top elevation _____ ft. MSL	2. Protective cover pipe: Yes
C. Land surface elevation 798.26 ft. MSL	a. Inside Diameter: 7 in.
D. Surface seal, bottom _____ ft. MSL or _____ ft.	b. Length: 10 in.
	c. Material: Cast Iron
	Other _____
	d. Additional protection? Yes
	If yes, describe: Bolted flush-mount cap
	3. Surface seal: Bentonite Yes
	Other: _____
	4. Material between well casing and protective pipe: Bentonite No
	Other _____
	5. Annular space seal: a. Granular/Chipped Bentonite Yes 33
	b. Lbs/gal mud weight.... Bentonite-sand slurry No
	c. Lbs/gal mud weight.... Bentonite slurry No
	d. _____% Bentonite... Bentonite-cement grout No
	e. _____ft ³ volume added for any of the above No
	f. How installed: Tremie No
	Tremie pumped No
	Gravity No
	6. Bentonite seal: a. Bentonite granules Yes 33
	b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips No
	c. _____ Other No
	7. Fine sand material: Manufacturer, product name & mesh size
	a. None Used No
	b. Volume added _____ft ³
	8. Filter pack material: Manufacturer, product name & mesh size
	a. Red Flint #40
	b. Volume added: 0.2 ft ³
	9. Well casing: Flush threaded PVC schedule 40 Yes 23
	Flush threaded PVC schedule 80 No
	Other No
	10. Screen material: PVC
	a. Screen type: Factory cut Yes 11
	Continuous slot Yes 01
	Other No
	b. Manufacturer: Monoflex
	c. Slot size: 0.010 in
	d. Slotted length: 10 ft.
	11. Backfill material (below filter pack): Sand

12. USCS classification of soil near screen:
GP GM GC GW SW **SP**
SM SC ML MH **CL** CH
Bedrock

13. Sieve analysis performed? Yes **No**

14. Drilling method used: Rotary 50
Hollow Stem Auger 41
Geoprobe **Other**

15. Drilling fluid used: Water 0 2 Air 0 1
Drilling Mud 0 3 **None** 9

16. Drilling additives used? Yes **No**
Describe _____

17. Source of water (attach analysis, if required)

E. Bentonite seal, top _____ ft. MSL or 1.0 ft.

F. Fine sand, top _____ ft. MSL or 4.5 ft.

G. Filter pack, top _____ ft. MSL or 4.5 ft.

H. Screen joint, top _____ ft. MSL or 6.0 ft.

I. Well bottom _____ ft. MSL or 16.0 ft.

J. Filter pack, bottom _____ ft. MSL or 16.0 ft.

K. Borehole, bottom _____ ft. MSL or 18.0 ft.

L. Borehole, diameter 2.75 in.

M. O.D. well casing 1.25 in.

N. I.D. well casing 1.00 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *Tyler Bengtson*

Firm

Ramboll

Facility/Project Name: Waukesha Water Utility		Local Grid Location of Well <input type="checkbox"/> N. <input type="checkbox"/> E. ft. <input type="checkbox"/> S. ft. <input type="checkbox"/> W.		Well Name: LG-B-5	
License/Permit/Monitoring Number		Local Grid Origin <input type="checkbox"/> (estimated <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. _____ ' _____ " Long. _____ ° _____ ' _____ "		Wis. Unique Well No. _____ DNR Well ID No. _____	
Facility ID		St. Plane 368513.738 ft. N. 2468403.77 ft. E. S/C/N		Date Well Installed 1 0 / 1 2 / 2 0 1 7 m m d d y y y y	
Type of Well Well Code _____ / _____		Section Location of Waste/Source <input type="checkbox"/> E 1/4 of 1/4 of Sec. _____, T. _____ N, R. <input type="checkbox"/> W		Well Installed By: Name (first, last) and Firm Tony Kapugi, Onsite Environmental	
Distance from Waste/Source _____ ft.		Location of Well Relative to Waste/Source u Upgradient s Sidegradient d Downgradient Not Known		Gov. Lot Number _____	
Enf. Stds. Apply <input type="checkbox"/>					

A. Protective Pipe, top elevation _____ ft. MSL		1. Cap and lock? Cap, no lock	
B. Well Casing, top elevation _____ ft. MSL		2. Protective cover pipe: a. Inside Diameter: 7 in. b. Length: 10 in. c. Material: Cast Iron Other _____	
C. Land surface elevation 798.985 ft. MSL		d. Additional protection? If yes, describe: Bolted flush-mount cap	Yes
D. Surface seal, bottom _____ ft. MSL or _____ ft.		3. Surface seal: Bentonite	Yes
		Other: _____	
		4. Material between well casing and protective pipe: Bentonite	No
		5. Annular space seal: a. Granular/Chipped Bentonite	Yes 33
		b. Lbs/gal mud weight.... Bentonite-sand slurry	No
		c. Lbs/gal mud weight.... Bentonite slurry	No
		d. _____% Bentonite... Bentonite-cement grout	No
	e. _____ ft ³ volume added for any of the above	No	
	f. How installed: Tremie	No	
	Tremie pumped	No	
	Gravity	No	
	6. Bentonite seal: a. Bentonite granules	Yes 33	
	b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips	No	
	c. _____ Other	No	
	7. Fine sand material: Manufacturer, product name & mesh size		
	a. None Used	No	
	b. Volume added _____ ft ³	No	
	8. Filter pack material: Manufacturer, product name & mesh size		
	a. Red Flint #40		
	b. Volume added: 0.2 ft ³		
	9. Well casing: Flush threaded PVC schedule 40	Yes 23	
	Flush threaded PVC schedule 80	No	
	Other _____	No	
	10. Screen material: PVC		
	a. Screen type: Factory cut	Yes 11	
	Continuous slot	Yes 01	
	Other _____	No	
	b. Manufacturer: Monoflex		
	c. Slot size: 0.010 in		
	d. Slotted length: 10 ft.		
	11. Backfill material (below filter pack): Sand		

12. USCS classification of soil near screen:
 GP GM **GC** GW SW **SP**
 SM SC **ML** MH **CL** CH
 Bedrock

13. Sieve analysis performed? Yes ☐ No ☒

14. Drilling method used: Rotary 50
 Hollow Stem Auger 41
 Geoprobe **Other**

15. Drilling fluid used: Water 0 2 Air 0 1
 Drilling Mud 0 3 **None** 9 9

16. Drilling additives used? Yes ☐ No ☒
 Describe _____

17. Source of water (attach analysis, if required)

E. Bentonite seal, top _____ ft. MSL or 1.5 ft.

F. Fine sand, top _____ ft. MSL or 4.0 ft.

G. Filter pack, top _____ ft. MSL or 4.0 ft.

H. Screen joint, top _____ ft. MSL or 7.0 ft.

I. Well bottom _____ ft. MSL or 16.0 ft.

J. Filter pack, bottom _____ ft. MSL or 16.0 ft.

K. Borehole, bottom _____ ft. MSL or 18.0 ft.

L. Borehole, diameter 2.75 in.

M. O.D. well casing 1.25 in.

N. I.D. well casing 1.00 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *Tyler Bengtson*

Firm

Ramboll

Facility/Project Name: Waukesha Water Utility		Local Grid Location of Well <input type="checkbox"/> N. <input type="checkbox"/> E. ft. <input type="checkbox"/> S. ft. <input type="checkbox"/> W.		Well Name: LG-B-6	
License/Permit/Monitoring Number		Local Grid Origin <input type="checkbox"/> (estimated <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. _____ ' _____ " Long. _____ ° _____ ' _____ "		Wis. Unique Well No. _____ DNR Well ID No. _____	
Facility ID		St. Plane 368239.699 ft. N. 2468406.315 ft. E. S/C/N		Date Well Installed 1 0 / 1 2 / 2 0 1 7 m m d d y y y y	
Type of Well Well Code _____ / _____		Section Location of Waste/Source <input type="checkbox"/> E 1/4 of 1/4 of Sec. _____, T. _____ N, R. <input type="checkbox"/> W		Well Installed By: Name (first, last) and Firm Tony Kapugi, Onsite Environmental	
Distance from Waste/Source _____ ft.		Enf. Stds. Apply <input type="checkbox"/>		Location of Well Relative to Waste/Source u Upgradient s Sidegradient d Downgradient Not Known	

A. Protective Pipe, top elevation _____ ft. MSL		1. Cap and lock? Cap, no lock	
B. Well Casing, top elevation _____ ft. MSL		2. Protective cover pipe: a. Inside Diameter: 7 in. b. Length: 10 in. c. Material: Cast Iron Other _____	
C. Land surface elevation 800.45 ft. MSL		d. Additional protection? If yes, describe: Bolted flush-mount cap Yes	
D. Surface seal, bottom _____ ft. MSL or _____ ft.		3. Surface seal: Bentonite Yes Other: _____	
12. USCS classification of soil near screen: GP GM GC GW SW SP SM SC ML MH CL CH Bedrock 13. Sieve analysis performed? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 14. Drilling method used: Rotary 50 Hollow Stem Auger 41 Geoprobe Other 15. Drilling fluid used: Water 0 2 Air 0 1 Drilling Mud 0 3 None 9 16. Drilling additives used? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Describe _____ 17. Source of water (attach analysis, if required) _____		4. Material between well casing and protective pipe: Bentonite No Other _____	
E. Bentonite seal, top _____ ft. MSL or 0.5 ft.		5. Annular space seal: a. Granular/Chipped Bentonite Yes 33 b. Lbs/gal mud weight.... Bentonite-sand slurry No c. Lbs/gal mud weight.... Bentonite slurry No d. _____% Bentonite... Bentonite-cement grout No e. _____ft3 volume added for any of the above No f. How installed: Tremie No Tremie pumped No Gravity No	
F. Fine sand, top _____ ft. MSL or 6.0 ft.		6. Bentonite seal: a. Bentonite granules Yes 33 b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips No c. _____ Other No	
G. Filter pack, top _____ ft. MSL or 6.0 ft.		7. Fine sand material: Manufacturer, product name & mesh size a. None Used No b. Volume added _____ft3 No	
H. Screen joint, top _____ ft. MSL or 8.0 ft.		8. Filter pack material: Manufacturer, product name & mesh size a. Red Flint #40 b. Volume added: 0.2 ft3	
I. Well bottom _____ ft. MSL or 18.0 ft.		9. Well casing: Flush threaded PVC schedule 40 Yes 23 Flush threaded PVC schedule 80 No Other No	
J. Filter pack, bottom _____ ft. MSL or 18.0 ft.		10. Screen material: PVC a. Screen type: Factory cut Yes 11 Continuous slot Yes 01 Other No	
K. Borehole, bottom _____ ft. MSL or 18.0 ft.		b. Manufacturer: Monoflex c. Slot size: 0.010 in.	
L. Borehole, diameter 2.75 in.		d. Slotted length: 10 ft.	
M. O.D. well casing 1.25 in.		11. Backfill material (below filter pack): No	
N. I.D. well casing 1.00 in.			

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *Tyler Bengtson*

Firm

Ramboll

Facility/Project Name: Waukesha Water Utility		Local Grid Location of Well <input type="checkbox"/> N. <input type="checkbox"/> E. ft. <input type="checkbox"/> S. ft. <input type="checkbox"/> W.		Well Name: LG-B-7	
License/Permit/Monitoring Number		Local Grid Origin <input type="checkbox"/> (estimated <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. _____ ' _____ " Long. _____ ° _____ ' _____ "		Wis. Unique Well No. _____ DNR Well ID No. _____	
Facility ID		St. Plane 367955.746 ft. N. 2468404.323 ft. E. S/C/N		Date Well Installed 1 0 / 1 2 / 2 0 1 7 m m d d y y y y	
Type of Well Well Code _____ / _____		Section Location of Waste/Source <input type="checkbox"/> E 1/4 of 1/4 of Sec. _____, T. _____ N, R. <input type="checkbox"/> W		Well Installed By: Name (first, last) and Firm Tony Kapugi, Onsite Environmental	
Distance from Waste/Source _____ ft.	Enf. Stds. Apply <input type="checkbox"/>	Location of Well Relative to Waste/Source u Upgradient s Sidegradient d Downgradient Not Known			

A. Protective Pipe, top elevation _____ ft. MSL	1. Cap and lock? _____	Cap, no lock
B. Well Casing, top elevation _____ ft. MSL	2. Protective cover pipe: a. Inside Diameter: _____ in.	Yes 7 in.
	b. Length: _____ in.	10 in.
	c. Material: _____	Cast Iron Other
C. Land surface elevation 801.774 ft. MSL	d. Additional protection? If yes, describe: Bolted flush-mount cap	Yes
D. Surface seal, bottom _____ ft. MSL or _____ ft.	3. Surface seal: _____	Bentonite Yes
	Other: _____	
12. USCS classification of soil near screen: GP GM GC GW SW SP SM SC ML MH CL CH Bedrock	4. Material between well casing and protective pipe: _____	Bentonite No Other
13. Sieve analysis performed? Yes No	5. Annular space seal: a. Granular/Chipped Bentonite	Yes 33
14. Drilling method used: Rotary 50	b. Lbs/gal mud weight.... Bentonite-sand slurry	No
Hollow Stem Auger 41	c. Lbs/gal mud weight.... Bentonite slurry	No
Geoprobe Other	d. _____% Bentonite... Bentonite-cement grout	No
15. Drilling fluid used: Water 0 2 Air 0 1	e. _____ ft ³ volume added for any of the above	No
Drilling Mud 0 3 None 9	f. How installed: _____	Tremie No Tremie pumped No Gravity No
16. Drilling additives used? Yes No	6. Bentonite seal: a. Bentonite granules	Yes 33
Describe _____	b. <input type="checkbox"/> 1/4 in. <input type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips	No
17. Source of water (attach analysis, if required) _____	c. _____	Other No
E. Bentonite seal, top _____ ft. MSL or 1.0 ft.	7. Fine sand material: Manufacturer, product name & mesh size	
F. Fine sand, top _____ ft. MSL or 6.0 ft.	a. None Used	No
G. Filter pack, top _____ ft. MSL or 6.0 ft.	b. Volume added _____ ft ³	No
H. Screen joint, top _____ ft. MSL or 8.0 ft.	8. Filter pack material: Manufacturer, product name & mesh size	
I. Well bottom _____ ft. MSL or 18.0 ft.	a. Red Flint #40	
J. Filter pack, bottom _____ ft. MSL or 18.0 ft.	b. Volume added: 0.2 ft ³	
K. Borehole, bottom _____ ft. MSL or 18.0 ft.	9. Well casing: Flush threaded PVC schedule 40	Yes 23
L. Borehole, diameter 2.75 in.	Flush threaded PVC schedule 80	No
M. O.D. well casing 1.25 in.	_____	Other No
N. I.D. well casing 1.00 in.	10. Screen material: _____	PVC
	a. Screen type: _____	Factory cut Yes 11 Continuous slot Yes 01 Other No
	b. Manufacturer: Monoflex	
	c. Slot size: 0.010 in	
	d. Slotted length: 10 ft.	
	11. Backfill material (below filter pack):	No

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Tyler Bengtson

Firm

Ramboll

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Facility/Project Name <u>W-57-18-S8</u>	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W.	Well Name <u>LC-3-8</u>
Facility License, Permit or Monitoring No.	Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. " Long. " or " "	Wis. Unique Well No. DNR Well ID No.
Facility ID	St. Plane ft. N. ft. E. S/C/N	Date Well Installed <u>04/19/2009</u>
Type of Well Well Code /	Section Location of Waste/Source 1/4 of 1/4 of Sec. T. N, R. <input type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm <u>Kepner Tony</u> <u>Onsite Environmental</u>
Distance from Waste/Source ft.	Enf. Stds. Apply <input type="checkbox"/>	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known
	Gov. Lot Number	

A. Protective pipe, top elevation _____ ft. MSL
B. Well casing, top elevation _____ ft. MSL
C. Land surface elevation _____ ft. MSL
D. Surface seal, bottom _____ ft. MSL or 0.5 ft.

12. USCS classification of soil near screen:

GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☒ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50
Hollow Stem Auger ☐ 41
DPT-GeoProbe Other ☒

15. Drilling fluid used: Water ☐ 02 Air ☐ 01
Drilling Mud ☐ 03 None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe _____

17. Source of water (attach analysis, if required):
N/A

E. Bentonite seal, top _____ ft. MSL or 1.8 ft.

F. Fine sand, top _____ ft. MSL or 2.8 ft.

G. Filter pack, top _____ ft. MSL or 3.8 ft.

H. Screen joint, top _____ ft. MSL or 4.8 ft.

I. Well bottom _____ ft. MSL or 14.8 ft.

J. Filter pack, bottom _____ ft. MSL or 15 ft.

K. Borehole, bottom _____ ft. MSL or 15 ft.

L. Borehole, diameter 2 in.

M. O.D. well casing 1.315 in.

N. I.D. well casing 1.009 in.

1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:

a. Inside diameter: 4 in.

b. Length: 0.5 ft.

c. Material: Steel ☒ 04

Flush Mount Box Other ☐

d. Additional protection? ☐ Yes ☒ No

If yes, describe: _____

3. Surface seal: Bentonite ☒ 30

Concrete ☐ 01

Other ☐

4. Material between well casing and protective pipe: Bentonite ☐ 30

Filter Pack Sand Other ☒

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33

b. _____ Lbs/gal mud weight... Bentonite-sand slurry ☐ 35

c. _____ Lbs/gal mud weight... Bentonite slurry ☐ 31

d. _____ % Bentonite... Bentonite-cement grout ☐ 50

e. 0.03 Ft³ volume added for any of the above

f. How installed: Tremie ☐ 01

Tremie pumped ☐ 02

Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33

b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32

c. _____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size

a. Red Flint Sand #15

b. Volume added 0.08 ft³

8. Filter pack material: Manufacturer, product name & mesh size

a. Red Flint Sand #40

b. Volume added 0.20 ft³

9. Well casing: Flush threaded PVC schedule 40 ☒ 23

Flush threaded PVC schedule 80 ☐ 24

Other ☐

10. Screen material: PVC

a. Screen type: Factory cut ☒ 11

Continuous slot ☐ 01

Other ☐

b. Manufacturer Johnson

c. Slot size: 0.010 in.

d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14

Other ☐

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Tyler Burgett Firm Ramboll

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

Facility/Project Name <u>W-512 1257112.58</u>	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W.	Well Name <u>LC-8-13</u>
Facility License, Permit or Monitoring No.	Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. <input type="checkbox"/> Long. <input type="checkbox"/> or <input type="checkbox"/>	Wis. Unique Well No. <input type="checkbox"/> DNR Well ID No. <input type="checkbox"/>
Facility ID	St. Plane <input type="checkbox"/> ft. N. <input type="checkbox"/> ft. E. S/C/N	Date Well Installed <u>04/14/2018</u> m m d d y y y y
Type of Well Well Code <u> </u> / <u> </u>	Section Location of Waste/Source 1/4 of <u> </u> 1/4 of Sec. <u> </u> T. <u> </u> N, R. <u> </u> <input type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm <u>Kapighi, Tony</u> <u>Corr Site Environmental</u>
Distance from Waste/Source <u> </u> ft.	Enf. Stds. Apply <input type="checkbox"/>	
	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	
	Gov. Lot Number <u> </u>	

A. Protective pipe, top elevation ft. MSL
B. Well casing, top elevation ft. MSL
C. Land surface elevation ft. MSL
D. Surface seal, bottom ft. MSL or 0.5 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

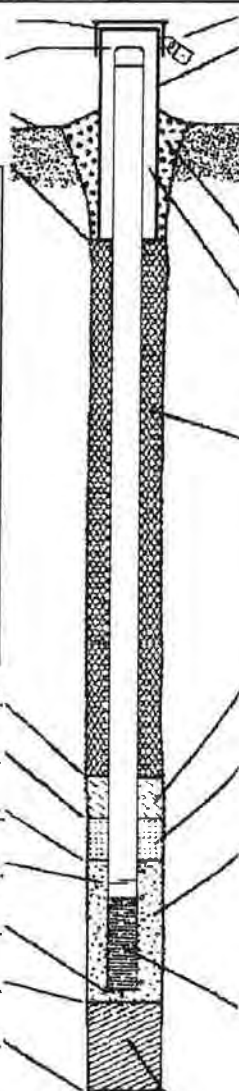
13. Sieve analysis performed? ☐ Yes ☒ No

14. Drilling method used: Rotary ☐ 50
Hollow Stem Auger ☐ 41
DPT - 60 Probe Other ☒

15. Drilling fluid used: Water ☐ 02 Air ☐ 01
Drilling Mud ☐ 03 None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No
Describe

17. Source of water (attach analysis, if required):
N/A



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 3 in.
b. Length: 0.5 ft.
c. Material: Flush Mount Box Steel ☐ 04
Other ☒
d. Additional protection? ☐ Yes ☒ No
If yes, describe:
3. Surface seal: Bentonite ☒ 30
Concrete ☐ 01
Other ☐
4. Material between well casing and protective pipe: Bentonite ☐ 30
Other ☒ Filter Pack Sand
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. Lbs/gal mud weight... Bentonite-sand slurry ☐ 35
c. Lbs/gal mud weight... Bentonite slurry ☐ 31
d. % Bentonite... Bentonite-cement grout ☐ 50
e. 0.03 Ft³ volume added for any of the above
f. How installed: Tremie ☐ 01
Tremie pumped ☐ 02
Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint Sand #15
b. Volume added 0.08 ft³
8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint Sand #40
b. Volume added 0.25 ft³
9. Well casing: Flush threaded PVC schedule 40 ☒ 23
Flush threaded PVC schedule 80 ☐ 24
Other ☐
10. Screen material: PVC
a. Screen type: Factory cut ☒ 11
Continuous slot ☐ 01
Other ☐
b. Manufacturer Johnson
c. Slot size: 0.015 in.
d. Slotted length: 10 ft.
11. Backfill material (below filter pack): None ☒ 14
Other ☐

E. Bentonite seal, top ft. MSL or 1.6 ft.
F. Fine sand, top ft. MSL or 9.5 ft.
G. Filter pack, top ft. MSL or 10.5 ft.
H. Screen joint, top ft. MSL or 11.5 ft.
I. Well bottom ft. MSL or 21.5 ft.
J. Filter pack, bottom ft. MSL or 22 ft.
K. Borehole, bottom ft. MSL or 22 ft.
L. Borehole, diameter 2 in.
M. O.D. well casing 1.315 in.
N. I.D. well casing 1.049 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Tyler Burgett Firm Rainbolt

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

<input type="checkbox"/> Verification Only of Fill and Seal	Route to DNR Bureau:		
	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> Watershed/Wastewater	<input type="checkbox"/> Remediation/Redevelopment
	<input type="checkbox"/> Waste Management	<input type="checkbox"/> Other: _____	

County Waukesha		WI Unique Well # of Removed Well		Hicap #		Facility Name Waukesha Water Utility													
Latitude / Longitude (see instructions) N <input type="checkbox"/> DD <input type="checkbox"/> GPS008 W <input type="checkbox"/> DDM <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001		Format Code		Method Code		Facility ID (FID or PWS)													
License/Permit/Monitoring #		Original Well Owner		Present Well Owner		Mailing Address of Present Owner													
Well Street Address 309 Sentry Drive		Well City, Village or Town City of Waukesha		Well ZIP Code 53186		City of Present Owner													
Subdivision Name		Lot #		State		ZIP Code													
Reason for Removal from Service Temporary monitoring well only		WI Unique Well # of Replacement Well		p, Liner, Screen, ng ing															
<input checked="" type="checkbox"/> Monitoring Well		Original Construction Date (mm/dd/yyyy) 10/12/2017		Pump and piping removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A															
<input type="checkbox"/> Water Well		If a Well Construction Report is available, please attach.		Liner(s) removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A															
<input type="checkbox"/> Borehole / Drillhole				Liner(s) perforated? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A															
Construction Type:				Screen removed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
<input type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug				Casing left in place? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
<input checked="" type="checkbox"/> Other (specify): GeoProbe				Was casing cut off below surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
Formation Type:				Did sealing material rise to surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
<input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock				Did material settle after 24 hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A															
Total Well Depth From Ground Surface (ft.) 18'		Casing Diameter (in.) --		If yes, was hole retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A															
Lower Drillhole Diameter (in.) 2.5"		Casing Depth (ft.) --		If bentonite chips were used, were they hydrated with water from a known safe source? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
Was well annular space grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		Depth to Water (feet)		Required Method of Placing Sealing Material															
If yes, to what depth (feet)?				<input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped															
				<input checked="" type="checkbox"/> Screened & Poured (Bentonite Chips) <input type="checkbox"/> Other (Explain): _____															
				Sealing Materials															
				<input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Concrete															
				<input type="checkbox"/> Sand-Cement (Concrete) Grout <input checked="" type="checkbox"/> Bentonite Chips															
				For Monitoring Wells and Monitoring Well Boreholes Only:															
				<input checked="" type="checkbox"/> Bentonite Chips <input type="checkbox"/> Bentonite - Cement Grout															
				<input checked="" type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Sand Slurry															
				Sealing Materials Table															
				<table border="1"> <thead> <tr> <th></th> <th></th> <th>(circle one)</th> <th>Weight</th> </tr> </thead> <tbody> <tr> <td>Topsoil</td> <td>Surface</td> <td>0.5'</td> <td></td> </tr> <tr> <td>Granular bentonite</td> <td>0.5'</td> <td>18'</td> <td></td> </tr> </tbody> </table>						(circle one)	Weight	Topsoil	Surface	0.5'		Granular bentonite	0.5'	18'	
		(circle one)	Weight																
Topsoil	Surface	0.5'																	
Granular bentonite	0.5'	18'																	

LG-B-1

Borehole Northing: 369368.42

Borehole Easting: 2468398.039

Supervisi			DNR Use Only	
Name of Person or Firm Doing Filling & Sealing Tony Kapugi	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) 11/22/17	Date Received	Noted By
Street or Route P.O. Box 280	Telephone Number (608) 837-8992	Comments		
City Sun Prairie	State WI	ZIP Code 53590	Signature of Person Doing Work 	Date Signed 11/22/17

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

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<input type="checkbox"/> Verification Only of Fill and Seal	Route to DNR Bureau:		
	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> Watershed/Wastewater	<input type="checkbox"/> Remediation/Redevelopment
	<input type="checkbox"/> Waste Management	<input type="checkbox"/> Other: _____	

County Waukesha		WI Unique Well # of Removed Well		Hicap #		Facility Name Waukesha Water Utility	
Latitude / Longitude (see instructions) N W		Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM		Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001		Facility ID (FID or PWS)	
License/Permit/Monitoring #		Original Well Owner		Present Well Owner		Mailing Address of Present Owner	
Well Street Address 309 Sentry Drive		Well City, Village or Town City of Waukesha		Well ZIP Code 53186		City of Present Owner	
Subdivision Name		Lot #		State		ZIP Code	

Reason for Removal from Service Temporary monitoring well only		WI Unique Well # of Replacement Well		p. Liner, Screen, ng ing			
<input checked="" type="checkbox"/> Monitoring Well		Original Construction Date (mm/dd/yyyy) 10/12/2017		Pump and piping removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A			
<input type="checkbox"/> Water Well		If a Well Construction Report is available, please attach.		Liner(s) removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A			
<input type="checkbox"/> Borehole / Drillhole				Liner(s) perforated? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A			
				Screen removed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
				Casing left in place? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
				Was casing cut off below surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
				Did sealing material rise to surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			
				Did material settle after 24 hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A			
				If yes, was hole retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A			
				If bentonite chips were used, were they hydrated with water from a known safe source? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A			

Construction Type: <input type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input checked="" type="checkbox"/> Other (specify): GeoProbe		Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		Required Method of Placing Sealing Material <input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input checked="" type="checkbox"/> Screened & Poured (Bentonite Chips) <input type="checkbox"/> Other (Explain):			
Total Well Depth From Ground Surface (ft.) 18'		Casing Diameter (in.) --		Sealing Materials <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Sand-Cement (Concrete) Grout <input checked="" type="checkbox"/> Bentonite Chips			
Lower Drillhole Diameter (in.) 2.5"		Casing Depth (ft.) --		For Monitoring Wells and Monitoring Well Boreholes Only: <input checked="" type="checkbox"/> Bentonite Chips <input type="checkbox"/> Bentonite - Cement Grout <input checked="" type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Sand Slurry			

			(circle one)	Weight
Topsoil	Surface	0.5'		
Granular bentonite	0.5'	18'		

LG-B-2 Borehole Northing: 369134.096 Borehole Easting: 2468400.002

Supervisi			DNR Use Only	
Name of Person or Firm Doing Filling & Sealing Tony Kapugi		License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) 11/21/17	Date Received
Street or Route P.O. Box 280		Telephone Number (608) 837-8992		Noted By
City Sun Prairie	State WI	ZIP Code 53590	Signature of Person Doing Work	Date Signed 11/21/17

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

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☐ **Verification Only of Fill and Seal**

County Waukesha		WI Unique Well # of Removed Well		Hicap #		City Waukesha Water Utility	
Latitude / Longitude (see instructions)		Format Code		Method Code		Facility ID (FID or PWS)	
N		<input type="checkbox"/> DD		<input type="checkbox"/> GPS008		License/Permit/Monitoring #	
W		<input type="checkbox"/> DDM		<input type="checkbox"/> SCR002			
				<input type="checkbox"/> OTH001			
1/4 / 1/4		Section		Township		Original Well Owner	
or Gov't Lot #				N		Present Well Owner	
Well Street Address 309 Sentry Drive						Mailing Address of Present Owner	
Well City, Village or Town City of Waukesha				Well ZIP Code 53186		City of Present Owner	
Subdivision Name				Lot #		State	
						ZIP Code	

Reason for Removal from Service	WI Unique Well # of Replacement Well	p. Liner, Screen, ng ing
Temporary monitoring well only		Pump and piping removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

<input checked="" type="checkbox"/> Monitoring Well	Original Construction Date (mm/dd/yyyy)	Liner(s) removed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Water Well	10/12/2017	Liner(s) perforated?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Borehole / Drillhole	If a Well Construction Report is available, please attach.	Screen removed?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
		Casing left in place?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
		Was casing cut off below surface?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A

Construction Type: ☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): GeoProbe

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
18'	12"

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
2.5"	--

Was well annular space grouted? ☒ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)?	Depth to Water (feet)
-------------------------------	-----------------------

p, Liner, Screen,	ng	Ing	
Pump and piping removed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Liner(s) removed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Liner(s) perforated?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Screen removed?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Casing left in place?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Was casing cut off below surface?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Did sealing material rise to surface?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Did material settle after 24 hours?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
If yes, was hole retopped?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A

Required Method of Placing Sealing Material

<input type="checkbox"/> Conductor Pipe-Gravity	<input type="checkbox"/> Conductor Pipe-Pumped
<input checked="" type="checkbox"/> Screened & Poured (Bentonite Chips)	<input type="checkbox"/> Other (Explain): _____

Sealing Materials

<input type="checkbox"/> Neat Cement Grout	<input type="checkbox"/> Concrete
<input type="checkbox"/> Sand-Cement (Concrete) Grout	<input checked="" type="checkbox"/> Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

☒ Bentonite Chips ☐ Bentonite - Cement Grout


☒ Granular Bentonite ☐ Bentonite - Sand Slurry

			(circle one)	Weight
Topsoil	Surface	0.5'		
Granular bentonite	0.5'	18'		

LG-B-3

Borehole Northing: 368944.352

Borehole Easting: 2468400.605

Supervisi			DNR Use Only	
Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)	Date Received	Noted By
Tony Kapugi		11/22/17		
Street or Route	Telephone Number		Comments	
P.O. Box 280	(608) 837-8992			
City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Sun Prairie	WI	53590		11/22/17

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

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<input type="checkbox"/> Verification Only of Fill and Seal	Route to DNR Bureau:		
	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> Watershed/Wastewater	<input type="checkbox"/> Remediation/Redevelopment
	<input type="checkbox"/> Waste Management	<input type="checkbox"/> Other: _____	

County Waukesha		WI Unique Well # of Removed Well		Hicap #		Facility Name Waukesha Water Utility													
Latitude / Longitude (see instructions) N W		Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM		Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001		Facility ID (FID or PWS)													
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Reason for Removal from Service Temporary monitoring well only		WI Unique Well # of Replacement Well		p. Liner, Screen, ng ing															
<input checked="" type="checkbox"/> Monitoring Well		Original Construction Date (mm/dd/yyyy) 10/12/2017		Pump and piping removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A															
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<input type="checkbox"/> Borehole / Drillhole				Liner(s) perforated? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A															
Construction Type:				Screen removed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
<input type="checkbox"/> Drilled		<input type="checkbox"/> Driven (Sandpoint)		Casing left in place? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
<input checked="" type="checkbox"/> Other (specify): GeoProbe				Was casing cut off below surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
Formation Type:				Did sealing material rise to surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
<input checked="" type="checkbox"/> Unconsolidated Formation		<input type="checkbox"/> Bedrock		Did material settle after 24 hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A															
Total Well Depth From Ground Surface (ft.) 18'		Casing Diameter (in.) --		If yes, was hole retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A															
Lower Drillhole Diameter (in.) 2.5"		Casing Depth (ft.) --		If bentonite chips were used, were they hydrated with water from a known safe source? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
Was well annular space grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		Depth to Water (feet)		Required Method of Placing Sealing Material															
If yes, to what depth (feet)?				<input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped															
				<input checked="" type="checkbox"/> Screened & Poured (Bentonite Chips) <input type="checkbox"/> Other (Explain):															
				Sealing Materials															
				<input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Concrete															
				<input type="checkbox"/> Sand-Cement (Concrete) Grout <input checked="" type="checkbox"/> Bentonite Chips															
				For Monitoring Wells and Monitoring Well Boreholes Only:															
				<input checked="" type="checkbox"/> Bentonite Chips <input type="checkbox"/> Bentonite - Cement Grout															
				<input checked="" type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Sand Slurry															
				Sealing Materials Table															
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		(circle one)	Weight																
Topsoil	Surface	0.5'																	
Granular bentonite	0.5'	18'																	

Supervisi		DNR Use Only	
Name of Person or Firm Doing Filling & Sealing Tony Kapugi		License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) 11/21/17
Street or Route P.O. Box 280		Telephone Number (608) 837-8992	Date Received
City Sun Prairie		State WI	Noted By
ZIP Code 53590		Signature of Person Doing Work	Comments
		Date Signed 11/22/17	

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

<input type="checkbox"/> Verification Only of Fill and Seal	Route to DNR Bureau:		
	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> Watershed/Wastewater	<input type="checkbox"/> Remediation/Redevelopment
	<input type="checkbox"/> Waste Management	<input type="checkbox"/> Other: _____	

County Waukesha		WI Unique Well # of Removed Well		Hicap #		Facility Name Waukesha Water Utility													
Latitude / Longitude (see instructions)		Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM		Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001		Facility ID (FID or PWS)													
License/Permit/Monitoring #		Original Well Owner		Present Well Owner		Mailing Address of Present Owner													
Well Street Address 309 Sentry Drive		Well ZIP Code 53186		City of Present Owner		State	ZIP Code												
Subdivision Name		Lot #		City of Present Owner		State	ZIP Code												
Reason for Removal from Service Temporary monitoring well only		WI Unique Well # of Replacement Well		p, Liner, Screen, ng ing															
<input checked="" type="checkbox"/> Monitoring Well		Original Construction Date (mm/dd/yyyy) 10/12/2017		Pump and piping removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A															
<input type="checkbox"/> Water Well		If a Well Construction Report is available, please attach.		Liner(s) removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A															
<input type="checkbox"/> Borehole / Drillhole				Liner(s) perforated? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A															
Construction Type:				Screen removed? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
<input type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug				Casing left in place? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
<input checked="" type="checkbox"/> Other (specify): GeoProbe				Was casing cut off below surface? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
Formation Type:				Did sealing material rise to surface? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
<input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock				Did material settle after 24 hours? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A															
Total Well Depth From Ground Surface (ft.) 18'		Casing Diameter (in.) --		If yes, was hole retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A															
Lower Drillhole Diameter (in.) 2.5"		Casing Depth (ft.) --		If bentonite chips were used, were they hydrated with water from a known safe source? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A															
Was well annular space grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		Depth to Water (feet)		Required Method of Placing Sealing Material															
If yes, to what depth (feet)?				<input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped															
				<input checked="" type="checkbox"/> Screened & Poured (Bentonite Chips) <input type="checkbox"/> Other (Explain): _____															
				Sealing Materials															
				<input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Concrete															
				<input type="checkbox"/> Sand-Cement (Concrete) Grout <input checked="" type="checkbox"/> Bentonite Chips															
				For Monitoring Wells and Monitoring Well Boreholes Only:															
				<input checked="" type="checkbox"/> Bentonite Chips <input type="checkbox"/> Bentonite - Cement Grout															
				<input checked="" type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Sand Slurry															
				Sealing Materials Table															
				<table border="1" style="width:100%"> <tr> <th></th> <th></th> <th>(circle one)</th> <th>Weight</th> </tr> <tr> <td>Topsoil</td> <td>Surface</td> <td>0.5'</td> <td></td> </tr> <tr> <td>Granular bentonite</td> <td>0.5'</td> <td>18'</td> <td></td> </tr> </table>						(circle one)	Weight	Topsoil	Surface	0.5'		Granular bentonite	0.5'	18'	
		(circle one)	Weight																
Topsoil	Surface	0.5'																	
Granular bentonite	0.5'	18'																	

LG-B-5 Borehole Northing: 368513.738 Borehole Easting: 2468403.77

Supervisi			DNR Use Only	
Name of Person or Firm Doing Filling & Sealing Tony Kapugi		License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) 6/18/15	Date Received
Street or Route P.O. Box 280		Telephone Number (608) 837-8992		Noted By
City Sun Prairie		State WI	ZIP Code 53590	Comments
Signature of Person Doing Work 			Date Signed 6/18/15	

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

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<input type="checkbox"/> Verification Only of Fill and Seal	Route to DNR Bureau:		
	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> Watershed/Wastewater	<input type="checkbox"/> Remediation/Redevelopment
	<input type="checkbox"/> Waste Management	<input type="checkbox"/> Other: _____	

County Waukesha		WI Unique Well # of Removed Well	Hicap #	Facility Name Waukesha Water Utility
Latitude / Longitude (see instructions) N W		Format Code <input type="checkbox"/> DD <input type="checkbox"/> DDM	Method Code <input type="checkbox"/> GPS008 <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001	Facility ID (FID or PWS)
1/4 / 1/4 or Gov't Lot #	Section	Township N	Range <input type="checkbox"/> E <input type="checkbox"/> W	License/Permit/Monitoring #
Well Street Address 309 Sentry Drive				Original Well Owner
Well City, Village or Town City of Waukesha				Present Well Owner
Well ZIP Code 53186				Mailing Address of Present Owner
Subdivision Name				City of Present Owner
				State
				ZIP Code

Reason for Removal from Service Temporary monitoring well only	WI Unique Well # of Replacement Well	p, Liner, Screen, ng ing	
<input checked="" type="checkbox"/> Monitoring Well	Original Construction Date (mm/dd/yyyy) 10/12/2017	Pump and piping removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Water Well	If a Well Construction Report is available, please attach.	Liner(s) removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Borehole / Drillhole		Liner(s) perforated?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
		Screen removed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Casing left in place?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Was casing cut off below surface?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Did sealing material rise to surface?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Did material settle after 24 hours?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
		If yes, was hole retopped?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
		If bentonite chips were used, were they hydrated with water from a known safe source?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Construction Type: <input type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input checked="" type="checkbox"/> Other (specify): GeoProbe		Required Method of Placing Sealing Material <input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input checked="" type="checkbox"/> Screened & Poured (Bentonite Chips) <input type="checkbox"/> Other (Explain): _____	
Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		Sealing Materials <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Sand-Cement (Concrete) Grout <input checked="" type="checkbox"/> Bentonite Chips	
Total Well Depth From Ground Surface (ft.) 18'	Casing Diameter (in.) --	For Monitoring Wells and Monitoring Well Boreholes Only: <input checked="" type="checkbox"/> Bentonite Chips <input type="checkbox"/> Bentonite - Cement Grout <input checked="" type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Sand Slurry	
Lower Drillhole Diameter (in.) 2.5"	Casing Depth (ft.) --		
Was well annular space grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown			
If yes, to what depth (feet)?	Depth to Water (feet)		

			(circle one)	Weight
Topsoil	Surface	0.5'		
Granular bentonite	0.5'	18'		

LG-B-6

Borehole Northing: 368239.699

Borehole Easting: 2468406.315

Supervisi			DNR Use Only	
Name of Person or Firm Doing Filling & Sealing Tony Kapugi	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) 11/21/17	Date Received	Noted By
Street or Route P.O. Box 280		Telephone Number (608) 837-8992	Comments	
City Sun Prairie	State WI	ZIP Code 53590	Signature of Person Doing Work	Date Signed 11/21/17

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

<input type="checkbox"/> Verification Only of Fill and Seal	Route to DNR Bureau:		
	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> Watershed/Wastewater	<input type="checkbox"/> Remediation/Redevelopment
	<input type="checkbox"/> Waste Management	<input type="checkbox"/> Other: _____	

County Waukesha		WI Unique Well # of Removed Well	Hicap #	Facility Name Waukesha Water Utility
Latitude / Longitude (see instructions) N <input type="checkbox"/> DD <input type="checkbox"/> GPS008 W <input type="checkbox"/> DDM <input type="checkbox"/> SCR002 <input type="checkbox"/> OTH001		Facility ID (FID or PWS)		
Section		Township	Range <input type="checkbox"/> E <input type="checkbox"/> W	License/Permit/Monitoring #
1/4 / 1/4 or Gov't Lot #	Well Street Address 309 Sentry Drive	Original Well Owner		
Well City, Village or Town City of Waukesha	Well ZIP Code 53186	Present Well Owner		
Subdivision Name	Lot #	Mailing Address of Present Owner		
		City of Present Owner	State	ZIP Code

Reason for Removal from Service Temporary monitoring well only	WI Unique Well # of Replacement Well	p, Liner, Screen, ng ing	
<input checked="" type="checkbox"/> Monitoring Well	Original Construction Date (mm/dd/yyyy) 10/12/2017	Pump and piping removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Water Well	If a Well Construction Report is available, please attach.	Liner(s) removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Borehole / Drillhole		Liner(s) perforated?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
		Screen removed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Casing left in place?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Was casing cut off below surface?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Did sealing material rise to surface?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
		Did material settle after 24 hours?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A
		If yes, was hole retopped?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
		If bentonite chips were used, were they hydrated with water from a known safe source?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Construction Type: <input type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input checked="" type="checkbox"/> Other (specify): GeoProbe		Required Method of Placing Sealing Material <input type="checkbox"/> Conductor Pipe-Gravity <input type="checkbox"/> Conductor Pipe-Pumped <input checked="" type="checkbox"/> Screened & Poured (Bentonite Chips) <input type="checkbox"/> Other (Explain):	
Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		Sealing Materials <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Concrete <input type="checkbox"/> Sand-Cement (Concrete) Grout <input checked="" type="checkbox"/> Bentonite Chips	
Total Well Depth From Ground Surface (ft.) 18'	Casing Diameter (in.) --	For Monitoring Wells and Monitoring Well Boreholes Only: <input checked="" type="checkbox"/> Bentonite Chips <input type="checkbox"/> Bentonite - Cement Grout <input checked="" type="checkbox"/> Granular Bentonite <input type="checkbox"/> Bentonite - Sand Slurry	
Lower Drillhole Diameter (in.) 2.5"	Casing Depth (ft.) --		
Was well annular space grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown			
If yes, to what depth (feet)?	Depth to Water (feet)		

			(circle one)	Weight
Topsoil	Surface	0.5'		
Granular bentonite	0.5'	18'		

LG-B-7	Borehole Northing: 367955.746	Borehole Easting: 2468404.323
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Supervisi			DNR Use Only	
Name of Person or Firm Doing Filling & Sealing Tony Kapugi	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy) 11/21/17	Date Received	Noted By
Street or Route P.O. Box 280	Telephone Number (608) 837-8992	Comments		
City Sun Prairie	State WI	ZIP Code 53590	Signature of Person Doing Work	Date Signed 11/21/17

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

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☐ Verification Only of Fill and Seal

Route to DNR Bureau:

☐ Drinking Water

☐ Watershed/Wastewater

☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

1. Well Location Information

County Waukesha WI Unique Well # of Removed Well _____ Hicap # _____

Latitude / Longitude (see instructions) _____ N ☐ DD ☐ GPS008
W ☐ DDM ☐ SCR002
Method Code ☐ OTH001

1/4 1/4 _____ 1/4 _____ Section _____ Township _____ Range ☐ E ☐ W
or Gov't Lot # _____

Well Street Address 309 Sentry Drive

Well City, Village or Town Waukesha Well ZIP Code _____

Subdivision Name _____ Lot # _____

Reason for Removal from Service soil boring WI Unique Well # of Replacement Well _____

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole
Original Construction Date (mm/dd/yyyy) 04/19/2018
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Geo Probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.) _____ Casing Diameter (in.) _____

Lower Drillhole Diameter (in.) _____ Casing Depth (ft.) _____

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown

If yes, to what depth (feet)? _____ Depth to Water (feet) _____

5. Material Used to Fill Well / Drillhole

Topsoil
Bentonite

2. Facility Owner Information

Facility Name Waukesha Water Utility

Facility ID (FID or PWS) _____

License/Permit/Monitoring # _____

Original Well Owner _____

Present Well Owner _____

Mailing Address of Present Owner _____

City of Present Owner _____ State _____ ZIP Code _____

City of Present Owner _____ State _____ ZIP Code _____

City of Present Owner _____ State _____ ZIP Code _____

City of Present Owner _____ State _____ ZIP Code _____

City of Present Owner _____ State _____ ZIP Code _____

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed? ☐ Yes ☐ No ☒ N/A

Liner(s) removed? ☐ Yes ☐ No ☒ N/A

Liner(s) perforated? ☐ Yes ☐ No ☒ N/A

Screen removed? ☐ Yes ☐ No ☒ N/A

Casing left in place? ☐ Yes ☐ No ☒ N/A

Was casing cut off below surface? ☐ Yes ☐ No ☒ N/A

Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A

Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A

If yes, was hole retopped? ☐ Yes ☐ No ☒ N/A

If bentonite chips were used, were they hydrated with water from a known safe source? ☒ Yes ☐ No ☐ N/A

Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped

☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials

☐ Neat Cement Grout ☐ Concrete

☐ Sand-Cement (Concrete) Grout ☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

☐ Bentonite Chips ☐ Bentonite - Cement Grout

☐ Granular Bentonite ☐ Bentonite - Sand Slurry

6. Comments

LG-B-9

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing <u>Tony Kapugi</u>	License # _____	Date of Filling & Sealing or Verification (mm/dd/yyyy) <u>04/19/2018</u>	DNR Use Only	
Street or Route <u>P.O. Box 260</u>	City <u>Sum Prairie</u>	State <u>WI</u>	ZIP Code <u>53590</u>	Date Received _____
Telephone Number <u>(608) 837-8992</u>		Noted By _____		
Signature of Person Doing Work <u>Anthony R. Kapugi</u>		Comments _____		
Date Signed <u>07/11/2018</u>		_____		

Well / Drillhole / Borehole Filling & Sealing Report

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☐ Verification Only of Fill and Seal

Route to DNR Bureau:

☐ Drinking Water

☐ Watershed/Wastewater

☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

1. Well Location Information

County Waukesha WI Unique Well # of Removed Well _____ Hicap # _____

Latitude / Longitude (see instructions) _____ N ☐ DD ☐ GPS008
_____ W ☐ DDM ☐ SCR002
_____ ☐ OTH001

1/4 1/4 _____ Section _____ Township _____ Range ☐ E ☐ W
or Gov't Lot # _____

Well Street Address 309 Sentry Drive

Well City, Village or Town Waukesha Well ZIP Code _____

Subdivision Name _____ Lot # _____

2. Facility / Owner Information

Facility Name Waukesha Water Utility

Facility ID (FID or PWS) _____

License/Permit/Monitoring # _____

Original Well Owner _____

Present Well Owner _____

Mailing Address of Present Owner _____

City of Present Owner _____ State _____ ZIP Code _____

Reason for Removal from Service soil boring WI Unique Well # of Replacement Well _____

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well
☐ Water Well
☒ Borehole / Drillhole
Original Construction Date (mm/dd/yyyy) 04/19/2018
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): Geo Probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.) _____ Casing Diameter (in.) _____

Lower Drillhole Diameter (in.) _____ Casing Depth (ft.) _____

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown

If yes, to what depth (feet)? _____ Depth to Water (feet) _____

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed? ☐ Yes ☐ No ☒ N/A

Liner(s) removed? ☐ Yes ☐ No ☒ N/A

Liner(s) perforated? ☐ Yes ☐ No ☒ N/A

Screen removed? ☐ Yes ☐ No ☒ N/A

Casing left in place? ☐ Yes ☐ No ☒ N/A

Was casing cut off below surface? ☐ Yes ☐ No ☒ N/A

Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A

Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A

If yes, was hole retopped? ☐ Yes ☐ No ☒ N/A

If bentonite chips were used, were they hydrated with water from a known safe source? ☒ Yes ☐ No ☐ N/A

Required Method of Placing Sealing Material

☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped

☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials

☐ Neat Cement Grout ☐ Concrete

☐ Sand-Cement (Concrete) Grout ☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:

☐ Bentonite Chips ☐ Bentonite - Cement Grout

☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

Topsoil Surface 0.5

Bentonite 0.5 20

6. Comments

LG-B-10

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing Tony Kapugi License # _____ Date of Filling & Sealing or Verification (mm/dd/yyyy) 04/19/2018

Street or Route _____ Telephone Number (608) 837-8992

P.O. Box 260 City Sun Prairie State WI ZIP Code 53590

Signature of Person Doing Work Anthony R. Kapugi Date Signed 07/11/2018

DNR Use Only

Date Received _____ Noted By _____

Comments _____

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015) Page 1 of 2

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☐ Verification Only of Fill and Seal

Route to DNR Bureau:

☐ Drinking Water ☐ Watershed/Wastewater ☒ Remediation/Redevelopment
☐ Waste Management ☐ Other: _____

1. Well Location Information

County Waukesha WI Unique Well # of Removed Well _____ Hicap # _____

Latitude / Longitude (see instructions) _____ N ☐ DD ☐ GPS008
W ☐ DDM ☐ SCR002
Method Code ☐ OTH001

1/4 1/4 _____ Section _____ Township _____ Range ☐ E
or Gov't Lot # _____ N ☐ W

Well Street Address 309 Senny Drive

Well City, Village or Town Waukesha Well ZIP Code _____

Subdivision Name _____ Lot # _____

Reason for Removal from Service soil boring WI Unique Well # of Replacement Well _____

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well ☐ Water Well ☒ Borehole / Drillhole
Original Construction Date (mm/dd/yyyy) 04/19/2018
If a Well Construction Report is available, please attach.

Construction Type:
☐ Drilled ☐ Driven (Sandpoint) ☐ Dug
☒ Other (specify): soil probe

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.) _____ Casing Diameter (in.) _____

Lower Drillhole Diameter (in.) _____ Casing Depth (ft.) _____

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown

If yes, to what depth (feet)? _____ Depth to Water (feet) _____

5. Material Used to Fill Well / Drillhole

Topsoil Bentonite

Surface 0.5 0.5 20

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing Tony Kapugi License # _____ Date of Filling & Sealing or Verification (mm/dd/yyyy) 04/19/2018

Street or Route P.O. Box 260 Telephone Number (608) 837-8992

City Seneca Prairie State WI ZIP Code 53590 Signature of Person Doing Work Anthony R. Kapugi

2. Facility Owner Information

Facility Name Waukesha Water Utility

Facility ID (FID or PWS) _____ License/Permit/Monitoring # _____

Original Well Owner _____

Present Well Owner _____

Mailing Address of Present Owner _____

City of Present Owner _____ State _____ ZIP Code _____

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed? ☐ Yes ☐ No ☒ N/A

Liner(s) removed? ☐ Yes ☐ No ☒ N/A

Liner(s) perforated? ☐ Yes ☐ No ☒ N/A

Screen removed? ☐ Yes ☐ No ☒ N/A

Casing left in place? ☐ Yes ☐ No ☒ N/A

Was casing cut off below surface? ☐ Yes ☐ No ☒ N/A

Did sealing material rise to surface? ☒ Yes ☐ No ☐ N/A

Did material settle after 24 hours? ☐ Yes ☒ No ☐ N/A

If yes, was hole relapped? ☐ Yes ☐ No ☒ N/A

If bentonite chips were used, were they hydrated with water from a known safe source? ☒ Yes ☐ No ☐ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☐ Conductor Pipe-Pumped
☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain): _____

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☒ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☐ Bentonite Chips ☐ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

DNR Use Only
Date Received _____ Noted By _____

Comments _____

Date Signed 07/11/2018

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Page 1 of 2

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ Verification Only of Fill and Seal

Route to DNR Bureau:

☐ Drinking Water

☐ Watershed/Wastewater

☒ Remediation/Redevelopment

☐ Waste Management

☐ Other: _____

1. Well Location Information

County Waukesha WI Unique Well # of Removed Well _____ Hicap # _____

Latitude / Longitude (see instructions) _____ N ☐ DD ☐ GPS008
_____ W ☐ DDM ☐ SCR002
_____ ☐ OTH001

1/4 1/4 _____ Section _____ Township _____ Range ☐ E ☐ W
or Gov't Lot # _____

Well Street Address 309 Sentry Drive

Well City, Village or Town Waukesha Well ZIP Code _____

Subdivision Name _____ Lot # _____

Reason for Removal from Service soil boring WI Unique Well # of Replacement Well _____

3. Filled & Sealed Well / Drillhole / Borehole Information

☐ Monitoring Well ☐ Water Well ☒ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy) 04/19/2018

If a Well Construction Report is available, please attach.

Construction Type: ☐ Drilled ☐ Driven (Sandpoint) ☐ Dug ☒ Other (specify): Geo Probe

Formation Type: ☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.) _____ Casing Diameter (in.) _____

Lower Drillhole Diameter (in.) _____ Casing Depth (ft.) _____

Was well annular space grouted? ☐ Yes ☐ No ☒ Unknown

If yes, to what depth (feet)? _____ Depth to Water (feet) _____

5. Material Used to Fill Well / Drillhole

<u>Topsoil</u>	Surface	<u>0.5</u>		
<u>Bentonite</u>	<u>0.5</u>	<u>20</u>		

6. Comments

LG-B-12

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing <u>Tony Kapugi</u>	License # _____	Date of Filling & Sealing or Verification (mm/dd/yyyy) <u>04/19/2018</u>	DNR Use Only	
Street or Route <u>P.O. Box 260</u>	City <u>Shu Prairie</u>	State <u>WI</u>	ZIP Code <u>53590</u>	Date Received _____
Telephone Number <u>(608) 837-8992</u>		Noted By _____		
Signature of Person Doing Work <u>Anthony R. Kapugi</u>		Comments _____		
Date Signed <u>07/11/2018</u>				

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ Verification Only of Fill and Seal

Route to:

Drinking Water

Watershed/Wastewater

Remediation/Redevelopment

Waste Management

Other: _____

1. Well Location Information

County	WI Unique Well # of Removed Well	Hicap #
Latitude / Longitude (Degrees and Minutes)		Method Code (see instructions)
_____ ° _____ ' N		
_____ ° _____ ' W		

1/4/1/4	1/4	Section	Township	Range	E
or Gov't Lot #			N		W

Well Street Address

Well City, Village or Town

Well ZIP Code

Subdivision Name

Lot #

Reason For Removal From Service

WI Unique Well # of Replacement Well

3. Well / Drillhole / Borehole Information

Monitoring ^{Well}	Original Construction Date (mm/dd/yyyy)
Water Well	
Borehole / Drillhole	If a Well Construction Report is available, please attach.
Construction Type:	
Drilled	Driven (Sandpoint)
Dug	
Other (specify):	

Formation Type:

Unconsolidated Formation

Bedrock

Total Well Depth From Ground Surface (ft.)

Casing Diameter (in.)

Lower Drillhole Diameter (in.)

Casing Depth (ft.)

Was well annular space grouted? Yes ☒ No ☐ Unknown

If yes, to what depth (feet)?

Depth to Water (feet)

5. Material Used To Fill Well / Drillhole

From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Surface			

6. Comments

7. Supervision of Work

Supervision of Work				DNR Use Only	
Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing (mm/dd/yyyy)	Date Received	Noted By	
Street or Route			Telephone Number		
			()		
City			State		
ZIP Code			Signature of Person Doing Work		
			Date Signed		

Gage Kapugi

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**
Route to:

Drinking Water

Watershed/Wastewater

Remediation/Redevelopment

Waste Management

Other: _____

1. Well Location Information

County Waukesha	WI Unique Well # of Removed Well	Hicap #
Latitude / Longitude (Degrees and Minutes)		Method Code (see instructions)
_____ ° _____ ' N		
_____ ° _____ ' W		

1/4/1/4	1/4	Section	Township N	Range E	W
---------	-----	---------	---------------	------------	---

or Gov't Lot #	Well Street Address 309 Sentry Drive	Well City, Village or Town Waukesha	Well ZIP Code 53186
Subdivision Name	Lot #		

Reason For Removal From Service Temporary Well Only	WI Unique Well # of Replacement Well
--	--------------------------------------

3. Well / Drillhole / Borehole Information

Monitoring Well Water Well Borehole / Drillhole	Original Construction Date (mm/dd/yyyy) 4/19/2018
If a Well Construction Report is available, please attach.	
Construction Type:	
Drilled	Driven (Sandpoint)
Dug	
Other (specify):	

Formation Type:	Bedrock
Unconsolidated Formation	

Total Well Depth From Ground Surface (ft.) 22	Casing Diameter (in.) 1
--	----------------------------

Lower Drillhole Diameter (in.) 2	Casing Depth (ft.) 22
-------------------------------------	--------------------------

Was well annular space grouted?	Yes	No	Unknown
---------------------------------	-----	----	---------

If yes, to what depth (feet)? N/A	Depth to Water (feet) 14.86
--------------------------------------	--------------------------------

5. Material Used To Fill Well / Drillhole

Topsoil	From (ft.) Surface	To (ft.) 0.5	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	0.5	22		

6. Comments

Boring ID: LG-B-13

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing Gage Kapugi	License #	Date of Filling & Sealing (mm/dd/yyyy) 8/28/2018	DNR Use Only	
Street or Route P.O. Box 280	Telephone Number (608) 837-8992	Comments	Date Received	Noted By
City Sun Prairie	State WI	ZIP Code 53590	Signature of Person Doing Work Gage Kapugi	Date Signed 9/7/2018

2 Facility/ Owner Information

Facility Name 309 Sentry Drive
Facility ID (FID or PWS)

License/Permit/Monitoring #

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner	State	ZIP Code
-----------------------	-------	----------

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	Yes	No	N/A
Liner(s) removed?	Yes	No	N/A
Screen removed?	Yes	No	N/A
Casing left in place?	Yes	No	N/A
Was casing cut off below surface?	Yes	No	N/A
Did sealing material rise to surface?	Yes	No	N/A
Did material settle after 24 hours?	Yes	No	N/A
If yes, was hole retopped?	Yes	No	N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	Yes	No	N/A

Required Method of Placing Sealing Material
Conductor Pipe-Gravity
Conductor Pipe-Pumped
Screened & Poured
Other (Explain):

(Bentonite Chips)

Sealing Materials

Neat Cement Grout	Clay-Sand Slurry (11 lb./gal. wt.)
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Sand-Cement (Concrete) Grout	Bentonite-Sand Slurry "
------------------------------	-------------------------

Concrete	Bentonite Chips
----------	-----------------

For Monitoring Wells and Monitoring Well Boreholes Only:

Bentonite Chips	Bentonite - Cement Grout
-----------------	--------------------------

Granular Bentonite	Bentonite - Sand Slurry
--------------------	-------------------------

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**
Route to:

Drinking Water

Watershed/Wastewater

Remediation/Redevelopment

Waste Management

Other: _____

1. Well Location Information

County Waukesha	WI Unique Well # of Removed Well	Hicap #
Latitude / Longitude (Degrees and Minutes)		Method Code (see instructions)
_____ ° _____ ' N		
_____ ° _____ ' W		

1/4/1/4	1/4	Section	Township N	Range E	W
or Gov't Lot #					

Well Street Address 309 Sentry Drive		Well ZIP Code 53186
Well City, Village or Town Waukesha		Lot #
Subdivision Name		

Reason For Removal From Service Soil Boring Only	WI Unique Well # of Replacement Well
---	--------------------------------------

3. Well / Drillhole / Borehole Information

Monitoring Well Water Well <u>Borehole / Drillhole</u>	Original Construction Date (mm/dd/yyyy) 8/28/2018
If a Well Construction Report is available, please attach.	
Construction Type: <u>Drilled</u> Driven (Sandpoint) Dug Other (specify):	

Formation Type: <u>Unconsolidated Formation</u> Bedrock
--

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
--	-----------------------

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
--------------------------------	--------------------

Was well annular space grouted?	Yes	No	Unknown
---------------------------------	-----	----	---------

If yes, to what depth (feet)?	Depth to Water (feet)
-------------------------------	-----------------------

5. Material Used To Fill Well / Drillhole

Topsoil	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	0.5		
	0.5	15		

6. Comments

Boring ID: LG-B-14

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing Gage Kapugi	License #	Date of Filling & Sealing (mm/dd/yyyy) 8/28/2018	DNR Use Only	
Street or Route P.O. Box 280	Telephone Number (608) 837-8992	Comments	Date Received	Noted By
City Sun Prairie	State WI	ZIP Code 53590	Signature of Person Doing Work <i>Gage Kapugi</i>	Date Signed 9/17/2018

2 Facility/ Owner Information

Facility Name 309 Sentry Drive
Facility ID (FID or PWS)

License/Permit/Monitoring #

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner	State	ZIP Code
-----------------------	-------	----------

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	Yes	No	<u>N/A</u>
Liner(s) removed?	Yes	No	<u>N/A</u>
Screen removed?	Yes	No	<u>N/A</u>
Casing left in place?	Yes	No	<u>N/A</u>
Was casing cut off below surface?	Yes	No	<u>N/A</u>
Did sealing material rise to surface?	<u>Yes</u>	No	N/A
Did material settle after 24 hours?	Yes	<u>No</u>	N/A
If yes, was hole retopped?	Yes	No	<u>N/A</u>
If bentonite chips were used, were they hydrated with water from a known safe source?	Yes	No	<u>N/A</u>

Required Method of Placing Sealing Material <u>Conductor Pipe-Gravity</u> Conductor Pipe-Pumped Screened & Poured Other (Explain):
--

(Bentonite Chips)

Sealing Materials

Neat Cement Grout	Clay-Sand Slurry (11 lb./gal. wt.)
-------------------	------------------------------------

Sand-Cement (Concrete) Grout	Bentonite-Sand Slurry"
------------------------------	------------------------

Concrete	<u>Bentonite Chips</u>
----------	------------------------

For Monitoring Wells and Monitoring Well Boreholes Only:

Bentonite Chips	Bentonite - Cement Grout
-----------------	--------------------------

Granular Bentonite	Bentonite - Sand Slurry
--------------------	-------------------------

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**
Route to:

Drinking Water

Watershed/Wastewater

Remediation/Redevelopment

Waste Management

Other: _____

1. Well Location Information

County Waukesha	WI Unique Well # of Removed Well	Hicap #
Latitude / Longitude (Degrees and Minutes)		Method Code (see instructions)
_____ ° _____ ' N		
_____ ° _____ ' W		

1/4/1/4	1/4	Section	Township	Range	E
or Gov't Lot #			N		W

Well Street Address

309 Sentry Drive

Well City, Village or Town

Waukesha

Subdivision Name

Well ZIP Code

53186

Lot #

Reason For Removal From Service

Soil Boring Only

WI Unique Well # of Replacement Well

3. Well / Drillhole / Borehole Information

Monitoring Well	Original Construction Date (mm/dd/yyyy)
Water Well	8/28/2018
Borehole / Drillhole	If a Well Construction Report is available, please attach.
Construction Type:	
Drilled	Driven (Sandpoint)
Dug	
Other (specify):	

Formation Type:

Unconsolidated Formation

Bedrock

Total Well Depth From Ground Surface (ft.)

Lower Drillhole Diameter (in.)

Casing Diameter (in.)

Was well annular space grouted? Yes No Unknown

If yes, to what depth (feet)?

Depth to Water (feet)

5. Material Used To Fill Well / Drillhole

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Topsoil	Surface	0.5		
Bentonite Chips	0.5	15		

6. Comments

Boring ID: LG-B-15

7. Supervision of Work

Supervision of Work				DNR Use Only	
Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing (mm/dd/yyyy)	Date Received	Noted By	
Gage Kapugi		8/28/2018			
Street or Route	Telephone Number		Comments		
P.O. Box 280	(608) 837-8992				
City	State	ZIP Code	Signature of Person Doing Work		Date Signed
Sun Prairie	WI	53590	Gage Kapugi		9/7/2018

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ Verification Only of Fill and Seal

Route to:

Drinking Water

Watershed/Wastewater

Remediation/Redevelopment

Waste Management

Other: _____

1. Well Location Information

County Waukesha	WI Unique Well # of Removed Well	Hicap #
Latitude / Longitude (Degrees and Minutes)		Method Code (see instructions)
_____ ° _____ ' N		
_____ ° _____ ' W		

1/4/1/4	1/4	Section	Township N	Range E	W
or Gov't Lot #					

Well Street Address 309 Sentry Drive		Well ZIP Code 53186
Well City, Village or Town Waukesha		Lot #
Subdivision Name		

Reason For Removal From Service Soil Boring Only	WI Unique Well # of Replacement Well
---	--------------------------------------

3. Well / Drillhole / Borehole Information

Monitoring Well Water Well Borehole / Drillhole	Original Construction Date (mm/dd/yyyy) 8/28/2018
If a Well Construction Report is available, please attach.	
Construction Type: Drilled Driven (Sandpoint) Dug Other (specify):	

Formation Type: Unconsolidated Formation	Bedrock
---	---------

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
--	-----------------------

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
--------------------------------	--------------------

Was well annular space grouted?	Yes	No	Unknown
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If yes, to what depth (feet)?	Depth to Water (feet)
-------------------------------	-----------------------

5. Material Used To Fill Well / Drillhole

Topsoil	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	0.5		
	0.5	15		

6. Comments

Boring ID: LG-B-16

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing Gage Kapugi	License #	Date of Filling & Sealing (mm/dd/yyyy) 8/28/2018	Date Received	Noted By
Street or Route P.O. Box 280	Telephone Number (608) 837-8992	Comments		
City Sun Prairie	State WI	ZIP Code 53590	Signature of Person Doing Work Gage Kapugi	Date Signed 9/7/2018

2 Facility/ Owner Information

Facility Name 309 Sentry Drive
Facility ID (FID or PWS)

License/Permit/Monitoring #

Original Well Owner

Present Well Owner

Mailing Address of Present Owner

City of Present Owner	State	ZIP Code
-----------------------	-------	----------

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	Yes	No	N/A
Liner(s) removed?	Yes	No	N/A
Screen removed?	Yes	No	N/A
Casing left in place?	Yes	No	N/A
Was casing cut off below surface?	Yes	No	N/A
Did sealing material rise to surface?	Yes	No	N/A
Did material settle after 24 hours?	Yes	No	N/A
If yes, was hole retopped?	Yes	No	N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	Yes	No	N/A

Required Method of Placing Sealing Material	
Conductor Pipe-Gravity Screened & Poured	Conductor Pipe-Pumped Other (Explain):

(Bentonite Chips)

Sealing Materials

Neat Cement Grout	Clay-Sand Slurry (11 lb./gal. wt.)
-------------------	------------------------------------

Sand-Cement (Concrete) Grout	Bentonite-Sand Slurry "
------------------------------	-------------------------

Concrete	Bentonite Chips
----------	-----------------

For Monitoring Wells and Monitoring Well Boreholes Only:

Bentonite Chips	Bentonite - Cement Grout
-----------------	--------------------------

Granular Bentonite	Bentonite - Sand Slurry
--------------------	-------------------------

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**
Route to:

Drinking Water

Watershed/Wastewater

Remediation/Redevelopment

Waste Management

Other: _____

1. Well Location Information

County Waukesha	WI Unique Well # of Removed Well	Hicap #
Latitude / Longitude (Degrees and Minutes)		Method Code (see instructions)
_____ ° _____ ' N		
_____ ° _____ ' W		

1/4/1/4	1/4	Section	Township N	Range E	W
or Gov't Lot #					

Well Street Address

309 Sentry Drive

Well City, Village or Town

Waukesha

Subdivision Name

Well ZIP Code

53186

Lot #

Reason For Removal From Service

Soil Boring Only

WI Unique Well # of Replacement Well

3. Well / Drillhole / Borehole Information

Monitoring Well	Original Construction Date (mm/dd/yyyy)
Water Well	8/28/2018
Borehole / Drillhole	If a Well Construction Report is available, please attach.
Construction Type:	
Drilled	Driven (Sandpoint)
Dug	
Other (specify):	

Formation Type:

Unconsolidated Formation

Bedrock

Total Well Depth From Ground Surface (ft.)

Lower Drillhole Diameter (in.)

Casing Diameter (in.)

Casing Depth (ft.)

Was well annular space grouted? Yes No Unknown

If yes, to what depth (feet)?

Depth to Water (feet)

5. Material Used To Fill Well / Drillhole

	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Topsoil	Surface	0.5		
Bentonite Chips	0.5	15		

6. Comments

Boring ID: LG-B-17

7. Supervision of Work

Supervision of Work				DNR Use Only	
Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing (mm/dd/yyyy)	Date Received	Noted By	
Gage Kapugi		8/28/2018			
Street or Route	Telephone Number		Comments		
P.O. Box 280	(608) 837-8992				
City	State	ZIP Code	Signature of Person Doing Work		Date Signed
Sun Prairie	WI	53590	Gage Kapugi		9/7/2018

(NO TEXT FOR THIS PAGE)



Appendix B – Laboratory Analytical Results



(NO TEXT FOR THIS PAGE)



14-Dec-2017

Donna Volk
Ramboll Environ US Corporation
175 N Corporate Drive
Suite 160
Brookfield, WI 53045

Re: **Site ID: 12.57/12.58 (21-41365B)**

Work Order: **17101025**

Dear Donna,

ALS Environmental received 14 samples on 14-Oct-2017 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 45.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

(NO TEXT FOR THIS PAGE)

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Work Order: 17101025

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
17101025-01	LG-B-1 (4-5')	Soil		10/12/2017 08:25	10/14/2017 09:30	<input type="checkbox"/>
17101025-02	LG-B-1 (13.5-14')	Soil		10/12/2017 08:35	10/14/2017 09:30	<input type="checkbox"/>
17101025-03	LG-B-2 (2.5-3.5')	Soil		10/12/2017 09:00	10/14/2017 09:30	<input type="checkbox"/>
17101025-04	LG-B-2 (9-10')	Soil		10/12/2017 09:10	10/14/2017 09:30	<input type="checkbox"/>
17101025-05	LG-B-3 (4-5')	Soil		10/12/2017 09:40	10/14/2017 09:30	<input type="checkbox"/>
17101025-06	LG-B-3 (9-10')	Soil		10/12/2017 09:50	10/14/2017 09:30	<input type="checkbox"/>
17101025-07	LG-B-4 (2-3')	Soil		10/12/2017 10:20	10/14/2017 09:30	<input type="checkbox"/>
17101025-08	LG-B-4 (7.5-8.5')	Soil		10/12/2017 10:30	10/14/2017 09:30	<input type="checkbox"/>
17101025-09	LG-B-5 (4-5')	Soil		10/12/2017 11:10	10/14/2017 09:30	<input type="checkbox"/>
17101025-10	LG-B-5 (9-10')	Soil		10/12/2017 11:20	10/14/2017 09:30	<input type="checkbox"/>
17101025-11	LG-B-6 (4-5')	Soil		10/12/2017 12:15	10/14/2017 09:30	<input type="checkbox"/>
17101025-12	LG-B-6 (10-11')	Soil		10/12/2017 12:50	10/14/2017 09:30	<input type="checkbox"/>
17101025-13	LG-B-7 (4-5')	Soil		10/12/2017 13:25	10/14/2017 09:30	<input type="checkbox"/>
17101025-14	LG-B-7 (8-9')	Soil		10/12/2017 13:30	10/14/2017 09:30	<input type="checkbox"/>

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Work Order: 17101025

Case Narrative

Samples for the above noted Work Order were received on 10/14/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, sample condition, preservation, and temperature compliance.

In order to ensure compliance with NR 149 criteria, please note the following report format:

- (1) The Limit of Detection (LOD) is reported as the MDL (Method Detection Limit)
- (2) The Limit of Quantitation (LOQ) is reported as the PQL (Practical Quantitation Limit)
- (3) All reported concentrations, including those for the LOD and LOQ, are adjusted for any required dilutions
- (4) All reported concentrations, including those for the LOD and LOQ, are adjusted for moisture content when samples are reported on a dry weight basis.

Samples were analyzed according to the analytical methodology previously documented in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Detail as to the associated samples can be found at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, acronyms, and units utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Volatile Organics

Batch 109306, Method VOC_8260_S, Sample 17101025-12A MS: The MS recovery was above the upper control limit for 1,1-Dichloroethene. The corresponding result in the parent sample was non-detect, therefore no qualification is required.

Batch 109306, Method VOC_8260_S, Sample 17101025-12A MS/MSD: The MS/MSD recoveries were above the upper control limits for 2-Butanone and Tetrachloroethene. The corresponding results in the parent sample were non-detect, therefore no qualification is required.

Batch 109306, Method VOC_8260_S, Sample 17101025-12A MSD: The RPD between the MS and MSD was outside the control limit for Chloroethane. The corresponding result in the parent sample should be considered estimated.

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
WorkOrder: 17101025

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
µg/Kg-dry	Micrograms per Kilogram Dry Weight

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-1 (4-5')
Collection Date: 10/12/2017 08:25 AM

Work Order: 17101025
Lab ID: 17101025-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		11	37	µg/Kg-dry	1	10/24/2017 12:06
1,1,2,2-Tetrachloroethane	U		9.4	31	µg/Kg-dry	1	10/24/2017 12:06
1,1,2-Trichloroethane	U		12	39	µg/Kg-dry	1	10/24/2017 12:06
1,1-Dichloroethane	U		10	33	µg/Kg-dry	1	10/24/2017 12:06
1,1-Dichloroethene	U		11	35	µg/Kg-dry	1	10/24/2017 12:06
1,2,3-Trichlorobenzene	U		17	57	µg/Kg-dry	1	10/24/2017 12:06
1,2,4-Trichlorobenzene	U		29	96	µg/Kg-dry	1	10/24/2017 12:06
1,2,4-Trimethylbenzene	U		7.9	26	µg/Kg-dry	1	10/24/2017 12:06
1,2-Dibromo-3-chloropropane	U		16	53	µg/Kg-dry	1	10/24/2017 12:06
1,2-Dibromoethane	U		13	44	µg/Kg-dry	1	10/24/2017 12:06
1,2-Dichlorobenzene	U		12	39	µg/Kg-dry	1	10/24/2017 12:06
1,2-Dichloroethane	U		11	36	µg/Kg-dry	1	10/24/2017 12:06
1,2-Dichloropropane	U		11	36	µg/Kg-dry	1	10/24/2017 12:06
1,3,5-Trimethylbenzene	U		17	57	µg/Kg-dry	1	10/24/2017 12:06
1,3-Dichlorobenzene	U		13	42	µg/Kg-dry	1	10/24/2017 12:06
1,4-Dichlorobenzene	U		10	34	µg/Kg-dry	1	10/24/2017 12:06
2-Butanone	U		53	180	µg/Kg-dry	1	10/24/2017 12:06
2-Hexanone	U		26	87	µg/Kg-dry	1	10/24/2017 12:06
4-Methyl-2-pentanone	U		29	95	µg/Kg-dry	1	10/24/2017 12:06
Benzene	U		8.8	29	µg/Kg-dry	1	10/24/2017 12:06
Bromochloromethane	U		18	58	µg/Kg-dry	1	10/24/2017 12:06
Bromodichloromethane	U		10	35	µg/Kg-dry	1	10/24/2017 12:06
Bromoform	U		14	46	µg/Kg-dry	1	10/24/2017 12:06
Bromomethane	U		17	57	µg/Kg-dry	1	10/24/2017 12:06
Carbon disulfide	U		13	44	µg/Kg-dry	1	10/24/2017 12:06
Carbon tetrachloride	U		6.9	23	µg/Kg-dry	1	10/24/2017 12:06
Chlorobenzene	U		12	39	µg/Kg-dry	1	10/24/2017 12:06
Chloroethane	U		25	83	µg/Kg-dry	1	10/24/2017 12:06
Chloroform	U		13	44	µg/Kg-dry	1	10/24/2017 12:06
Chloromethane	U		16	53	µg/Kg-dry	1	10/24/2017 12:06
cis-1,2-Dichloroethene	U		11	37	µg/Kg-dry	1	10/24/2017 12:06
cis-1,3-Dichloropropene	U		15	50	µg/Kg-dry	1	10/24/2017 12:06
Cyclohexane	U		20	65	µg/Kg-dry	1	10/24/2017 12:06
Dibromochloromethane	U		8.9	30	µg/Kg-dry	1	10/24/2017 12:06
Dichlorodifluoromethane	U		17	58	µg/Kg-dry	1	10/24/2017 12:06
Ethylbenzene	U		9.1	30	µg/Kg-dry	1	10/24/2017 12:06
Isopropylbenzene	U		15	51	µg/Kg-dry	1	10/24/2017 12:06
m,p-Xylene	U		18	59	µg/Kg-dry	1	10/24/2017 12:06

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-1 (4-5')
Collection Date: 10/12/2017 08:25 AM

Work Order: 17101025
Lab ID: 17101025-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		13	42	µg/Kg-dry	1	10/24/2017 12:06
Methylcyclohexane	U		17	57	µg/Kg-dry	1	10/24/2017 12:06
Methylene chloride	U		18	60	µg/Kg-dry	1	10/24/2017 12:06
Naphthalene	U		6.7	22	µg/Kg-dry	1	10/24/2017 12:06
o-Xylene	U		13	42	µg/Kg-dry	1	10/24/2017 12:06
Styrene	U		28	92	µg/Kg-dry	1	10/24/2017 12:06
Tetrachloroethene	U		19	64	µg/Kg-dry	1	10/24/2017 12:06
Toluene	U		13	43	µg/Kg-dry	1	10/24/2017 12:06
trans-1,2-Dichloroethene	U		11	37	µg/Kg-dry	1	10/24/2017 12:06
trans-1,3-Dichloropropene	U		7.0	23	µg/Kg-dry	1	10/24/2017 12:06
Trichloroethene	U		10	35	µg/Kg-dry	1	10/24/2017 12:06
Trichlorofluoromethane	U		7.5	25	µg/Kg-dry	1	10/24/2017 12:06
Vinyl chloride	U		12	41	µg/Kg-dry	1	10/24/2017 12:06
Xylenes, Total	U		30	100	µg/Kg-dry	1	10/24/2017 12:06
Surr: 1,2-Dichloroethane-d4	105			70-130	%REC	1	10/24/2017 12:06
Surr: 4-Bromofluorobenzene	97.8			70-130	%REC	1	10/24/2017 12:06
Surr: Dibromofluoromethane	96.3			70-130	%REC	1	10/24/2017 12:06
Surr: Toluene-d8	93.2			70-130	%REC	1	10/24/2017 12:06
MOISTURE			Method: SW3550C				Analyst: NW
Moisture	2.8		0.025	0.050	% of sample	1	10/19/2017 11:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-1 (13.5-14')
Collection Date: 10/12/2017 08:35 AM

Work Order: 17101025
Lab ID: 17101025-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		9.5	32	µg/Kg-dry	1	10/24/2017 12:30
1,1,2,2-Tetrachloroethane	U		8.0	27	µg/Kg-dry	1	10/24/2017 12:30
1,1,2-Trichloroethane	U		10	33	µg/Kg-dry	1	10/24/2017 12:30
1,1-Dichloroethane	U		8.5	28	µg/Kg-dry	1	10/24/2017 12:30
1,1-Dichloroethene	U		8.9	30	µg/Kg-dry	1	10/24/2017 12:30
1,2,3-Trichlorobenzene	U		15	49	µg/Kg-dry	1	10/24/2017 12:30
1,2,4-Trichlorobenzene	U		25	82	µg/Kg-dry	1	10/24/2017 12:30
1,2,4-Trimethylbenzene	U		6.7	22	µg/Kg-dry	1	10/24/2017 12:30
1,2-Dibromo-3-chloropropane	U		14	45	µg/Kg-dry	1	10/24/2017 12:30
1,2-Dibromoethane	U		11	37	µg/Kg-dry	1	10/24/2017 12:30
1,2-Dichlorobenzene	U		9.9	33	µg/Kg-dry	1	10/24/2017 12:30
1,2-Dichloroethane	U		9.1	30	µg/Kg-dry	1	10/24/2017 12:30
1,2-Dichloropropane	U		9.2	31	µg/Kg-dry	1	10/24/2017 12:30
1,3,5-Trimethylbenzene	U		15	49	µg/Kg-dry	1	10/24/2017 12:30
1,3-Dichlorobenzene	U		11	36	µg/Kg-dry	1	10/24/2017 12:30
1,4-Dichlorobenzene	U		8.7	29	µg/Kg-dry	1	10/24/2017 12:30
2-Butanone	U		45	150	µg/Kg-dry	1	10/24/2017 12:30
2-Hexanone	U		22	74	µg/Kg-dry	1	10/24/2017 12:30
4-Methyl-2-pentanone	U		24	81	µg/Kg-dry	1	10/24/2017 12:30
Benzene	U		7.5	25	µg/Kg-dry	1	10/24/2017 12:30
Bromochloromethane	U		15	50	µg/Kg-dry	1	10/24/2017 12:30
Bromodichloromethane	U		8.9	30	µg/Kg-dry	1	10/24/2017 12:30
Bromoform	U		12	39	µg/Kg-dry	1	10/24/2017 12:30
Bromomethane	U		14	48	µg/Kg-dry	1	10/24/2017 12:30
Carbon disulfide	U		11	38	µg/Kg-dry	1	10/24/2017 12:30
Carbon tetrachloride	U		5.9	20	µg/Kg-dry	1	10/24/2017 12:30
Chlorobenzene	U		10	33	µg/Kg-dry	1	10/24/2017 12:30
Chloroethane	U		21	71	µg/Kg-dry	1	10/24/2017 12:30
Chloroform	U		11	38	µg/Kg-dry	1	10/24/2017 12:30
Chloromethane	U		13	45	µg/Kg-dry	1	10/24/2017 12:30
cis-1,2-Dichloroethene	U		9.4	31	µg/Kg-dry	1	10/24/2017 12:30
cis-1,3-Dichloropropene	U		13	43	µg/Kg-dry	1	10/24/2017 12:30
Cyclohexane	U		17	55	µg/Kg-dry	1	10/24/2017 12:30
Dibromochloromethane	U		7.6	25	µg/Kg-dry	1	10/24/2017 12:30
Dichlorodifluoromethane	U		15	49	µg/Kg-dry	1	10/24/2017 12:30
Ethylbenzene	U		7.8	26	µg/Kg-dry	1	10/24/2017 12:30
Isopropylbenzene	U		13	43	µg/Kg-dry	1	10/24/2017 12:30
m,p-Xylene	U		15	50	µg/Kg-dry	1	10/24/2017 12:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-1 (13.5-14')
Collection Date: 10/12/2017 08:35 AM

Work Order: 17101025
Lab ID: 17101025-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		11	36	µg/Kg-dry	1	10/24/2017 12:30
Methylcyclohexane	U		14	48	µg/Kg-dry	1	10/24/2017 12:30
Methylene chloride	U		15	51	µg/Kg-dry	1	10/24/2017 12:30
Naphthalene	U		5.7	19	µg/Kg-dry	1	10/24/2017 12:30
o-Xylene	U		11	36	µg/Kg-dry	1	10/24/2017 12:30
Styrene	U		24	78	µg/Kg-dry	1	10/24/2017 12:30
Tetrachloroethene	U		16	55	µg/Kg-dry	1	10/24/2017 12:30
Toluene	U		11	37	µg/Kg-dry	1	10/24/2017 12:30
trans-1,2-Dichloroethene	U		9.4	31	µg/Kg-dry	1	10/24/2017 12:30
trans-1,3-Dichloropropene	U		6.0	20	µg/Kg-dry	1	10/24/2017 12:30
Trichloroethene	U		8.9	30	µg/Kg-dry	1	10/24/2017 12:30
Trichlorofluoromethane	U		6.4	21	µg/Kg-dry	1	10/24/2017 12:30
Vinyl chloride	U		11	35	µg/Kg-dry	1	10/24/2017 12:30
Xylenes, Total	U		26	86	µg/Kg-dry	1	10/24/2017 12:30
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	10/24/2017 12:30
Surr: 4-Bromofluorobenzene	99.0			70-130	%REC	1	10/24/2017 12:30
Surr: Dibromofluoromethane	93.0			70-130	%REC	1	10/24/2017 12:30
Surr: Toluene-d8	91.9			70-130	%REC	1	10/24/2017 12:30
MOISTURE			Method: SW3550C				Analyst: NW
Moisture	4.8		0.025	0.050	% of sample	1	10/19/2017 11:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-2 (2.5-3.5")
Collection Date: 10/12/2017 09:00 AM

Work Order: 17101025
Lab ID: 17101025-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		13	42	µg/Kg-dry	1	10/24/2017 12:54
1,1,2,2-Tetrachloroethane	U		11	36	µg/Kg-dry	1	10/24/2017 12:54
1,1,2-Trichloroethane	U		13	44	µg/Kg-dry	1	10/24/2017 12:54
1,1-Dichloroethane	U		11	38	µg/Kg-dry	1	10/24/2017 12:54
1,1-Dichloroethene	U		12	40	µg/Kg-dry	1	10/24/2017 12:54
1,2,3-Trichlorobenzene	U		20	65	µg/Kg-dry	1	10/24/2017 12:54
1,2,4-Trichlorobenzene	U		33	110	µg/Kg-dry	1	10/24/2017 12:54
1,2,4-Trimethylbenzene	U		9.0	30	µg/Kg-dry	1	10/24/2017 12:54
1,2-Dibromo-3-chloropropane	U		18	60	µg/Kg-dry	1	10/24/2017 12:54
1,2-Dibromoethane	U		15	50	µg/Kg-dry	1	10/24/2017 12:54
1,2-Dichlorobenzene	U		13	44	µg/Kg-dry	1	10/24/2017 12:54
1,2-Dichloroethane	U		12	40	µg/Kg-dry	1	10/24/2017 12:54
1,2-Dichloropropane	U		12	41	µg/Kg-dry	1	10/24/2017 12:54
1,3,5-Trimethylbenzene	U		20	65	µg/Kg-dry	1	10/24/2017 12:54
1,3-Dichlorobenzene	U		14	48	µg/Kg-dry	1	10/24/2017 12:54
1,4-Dichlorobenzene	U		12	39	µg/Kg-dry	1	10/24/2017 12:54
2-Butanone	U		60	200	µg/Kg-dry	1	10/24/2017 12:54
2-Hexanone	U		30	99	µg/Kg-dry	1	10/24/2017 12:54
4-Methyl-2-pentanone	U		33	110	µg/Kg-dry	1	10/24/2017 12:54
Benzene	U		10	34	µg/Kg-dry	1	10/24/2017 12:54
Bromochloromethane	U		20	67	µg/Kg-dry	1	10/24/2017 12:54
Bromodichloromethane	U		12	40	µg/Kg-dry	1	10/24/2017 12:54
Bromoform	U		16	53	µg/Kg-dry	1	10/24/2017 12:54
Bromomethane	U		19	64	µg/Kg-dry	1	10/24/2017 12:54
Carbon disulfide	U		15	50	µg/Kg-dry	1	10/24/2017 12:54
Carbon tetrachloride	U		7.9	26	µg/Kg-dry	1	10/24/2017 12:54
Chlorobenzene	U		13	45	µg/Kg-dry	1	10/24/2017 12:54
Chloroethane	U		28	95	µg/Kg-dry	1	10/24/2017 12:54
Chloroform	U		15	50	µg/Kg-dry	1	10/24/2017 12:54
Chloromethane	U		18	60	µg/Kg-dry	1	10/24/2017 12:54
cis-1,2-Dichloroethene	U		13	42	µg/Kg-dry	1	10/24/2017 12:54
cis-1,3-Dichloropropene	U		17	57	µg/Kg-dry	1	10/24/2017 12:54
Cyclohexane	U		22	74	µg/Kg-dry	1	10/24/2017 12:54
Dibromochloromethane	U		10	34	µg/Kg-dry	1	10/24/2017 12:54
Dichlorodifluoromethane	U		20	66	µg/Kg-dry	1	10/24/2017 12:54
Ethylbenzene	U		10	35	µg/Kg-dry	1	10/24/2017 12:54
Isopropylbenzene	U		17	58	µg/Kg-dry	1	10/24/2017 12:54
m,p-Xylene	U		20	67	µg/Kg-dry	1	10/24/2017 12:54

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-2 (2.5-3.5")
Collection Date: 10/12/2017 09:00 AM

Work Order: 17101025
Lab ID: 17101025-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		15	48	µg/Kg-dry	1	10/24/2017 12:54
Methylcyclohexane	U		19	64	µg/Kg-dry	1	10/24/2017 12:54
Methylene chloride	U		20	68	µg/Kg-dry	1	10/24/2017 12:54
Naphthalene	U		7.6	25	µg/Kg-dry	1	10/24/2017 12:54
o-Xylene	U		14	48	µg/Kg-dry	1	10/24/2017 12:54
Styrene	U		31	110	µg/Kg-dry	1	10/24/2017 12:54
Tetrachloroethene	U		22	73	µg/Kg-dry	1	10/24/2017 12:54
Toluene	U		15	49	µg/Kg-dry	1	10/24/2017 12:54
trans-1,2-Dichloroethene	U		13	42	µg/Kg-dry	1	10/24/2017 12:54
trans-1,3-Dichloropropene	U		8.0	27	µg/Kg-dry	1	10/24/2017 12:54
Trichloroethene	U		12	40	µg/Kg-dry	1	10/24/2017 12:54
Trichlorofluoromethane	U		8.6	29	µg/Kg-dry	1	10/24/2017 12:54
Vinyl chloride	U		14	47	µg/Kg-dry	1	10/24/2017 12:54
Xylenes, Total	U		35	120	µg/Kg-dry	1	10/24/2017 12:54
Surr: 1,2-Dichloroethane-d4	103			70-130	%REC	1	10/24/2017 12:54
Surr: 4-Bromofluorobenzene	97.5			70-130	%REC	1	10/24/2017 12:54
Surr: Dibromofluoromethane	96.8			70-130	%REC	1	10/24/2017 12:54
Surr: Toluene-d8	95.6			70-130	%REC	1	10/24/2017 12:54
MOISTURE			Method: SW3550C				Analyst: NW
Moisture	19		0.025	0.050	% of sample	1	10/19/2017 11:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-2 (9-10')
Collection Date: 10/12/2017 09:10 AM

Work Order: 17101025
Lab ID: 17101025-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		11	37	µg/Kg-dry	1	10/24/2017 01:18
1,1,2,2-Tetrachloroethane	U		9.5	32	µg/Kg-dry	1	10/24/2017 01:18
1,1,2-Trichloroethane	U		12	39	µg/Kg-dry	1	10/24/2017 01:18
1,1-Dichloroethane	U		10	33	µg/Kg-dry	1	10/24/2017 01:18
1,1-Dichloroethene	U		11	35	µg/Kg-dry	1	10/24/2017 01:18
1,2,3-Trichlorobenzene	U		17	58	µg/Kg-dry	1	10/24/2017 01:18
1,2,4-Trichlorobenzene	U		29	97	µg/Kg-dry	1	10/24/2017 01:18
1,2,4-Trimethylbenzene	U		7.9	26	µg/Kg-dry	1	10/24/2017 01:18
1,2-Dibromo-3-chloropropane	U		16	53	µg/Kg-dry	1	10/24/2017 01:18
1,2-Dibromoethane	U		13	44	µg/Kg-dry	1	10/24/2017 01:18
1,2-Dichlorobenzene	U		12	39	µg/Kg-dry	1	10/24/2017 01:18
1,2-Dichloroethane	U		11	36	µg/Kg-dry	1	10/24/2017 01:18
1,2-Dichloropropane	U		11	36	µg/Kg-dry	1	10/24/2017 01:18
1,3,5-Trimethylbenzene	U		17	57	µg/Kg-dry	1	10/24/2017 01:18
1,3-Dichlorobenzene	U		13	42	µg/Kg-dry	1	10/24/2017 01:18
1,4-Dichlorobenzene	U		10	34	µg/Kg-dry	1	10/24/2017 01:18
2-Butanone	U		53	180	µg/Kg-dry	1	10/24/2017 01:18
2-Hexanone	U		26	87	µg/Kg-dry	1	10/24/2017 01:18
4-Methyl-2-pentanone	U		29	96	µg/Kg-dry	1	10/24/2017 01:18
Benzene	U		8.9	30	µg/Kg-dry	1	10/24/2017 01:18
Bromochloromethane	U		18	59	µg/Kg-dry	1	10/24/2017 01:18
Bromodichloromethane	U		11	35	µg/Kg-dry	1	10/24/2017 01:18
Bromoform	U		14	46	µg/Kg-dry	1	10/24/2017 01:18
Bromomethane	U		17	57	µg/Kg-dry	1	10/24/2017 01:18
Carbon disulfide	U		13	44	µg/Kg-dry	1	10/24/2017 01:18
Carbon tetrachloride	U		7.0	23	µg/Kg-dry	1	10/24/2017 01:18
Chlorobenzene	U		12	39	µg/Kg-dry	1	10/24/2017 01:18
Chloroethane	U		25	83	µg/Kg-dry	1	10/24/2017 01:18
Chloroform	U		13	44	µg/Kg-dry	1	10/24/2017 01:18
Chloromethane	U		16	53	µg/Kg-dry	1	10/24/2017 01:18
cis-1,2-Dichloroethene	U		11	37	µg/Kg-dry	1	10/24/2017 01:18
cis-1,3-Dichloropropene	U		15	50	µg/Kg-dry	1	10/24/2017 01:18
Cyclohexane	U		20	65	µg/Kg-dry	1	10/24/2017 01:18
Dibromochloromethane	U		9.0	30	µg/Kg-dry	1	10/24/2017 01:18
Dichlorodifluoromethane	U		17	58	µg/Kg-dry	1	10/24/2017 01:18
Ethylbenzene	U		9.2	31	µg/Kg-dry	1	10/24/2017 01:18
Isopropylbenzene	U		15	51	µg/Kg-dry	1	10/24/2017 01:18
m,p-Xylene	U		18	59	µg/Kg-dry	1	10/24/2017 01:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-2 (9-10')
Collection Date: 10/12/2017 09:10 AM

Work Order: 17101025
Lab ID: 17101025-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		13	43	µg/Kg-dry	1	10/24/2017 01:18
Methylcyclohexane	U		17	57	µg/Kg-dry	1	10/24/2017 01:18
Methylene chloride	U		18	60	µg/Kg-dry	1	10/24/2017 01:18
Naphthalene	U		6.7	22	µg/Kg-dry	1	10/24/2017 01:18
o-Xylene	U		13	42	µg/Kg-dry	1	10/24/2017 01:18
Styrene	U		28	93	µg/Kg-dry	1	10/24/2017 01:18
Tetrachloroethene	U		19	65	µg/Kg-dry	1	10/24/2017 01:18
Toluene	U		13	43	µg/Kg-dry	1	10/24/2017 01:18
trans-1,2-Dichloroethene	U		11	37	µg/Kg-dry	1	10/24/2017 01:18
trans-1,3-Dichloropropene	U		7.0	23	µg/Kg-dry	1	10/24/2017 01:18
Trichloroethene	U		10	35	µg/Kg-dry	1	10/24/2017 01:18
Trichlorofluoromethane	U		7.6	25	µg/Kg-dry	1	10/24/2017 01:18
Vinyl chloride	U		12	42	µg/Kg-dry	1	10/24/2017 01:18
Xylenes, Total	U		30	100	µg/Kg-dry	1	10/24/2017 01:18
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	10/24/2017 01:18
Surr: 4-Bromofluorobenzene	94.5			70-130	%REC	1	10/24/2017 01:18
Surr: Dibromofluoromethane	93.7			70-130	%REC	1	10/24/2017 01:18
Surr: Toluene-d8	90.0			70-130	%REC	1	10/24/2017 01:18
MOISTURE			Method: SW3550C				Analyst: NW
Moisture	5.2		0.025	0.050	% of sample	1	10/19/2017 11:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-3 (4-5')
Collection Date: 10/12/2017 09:40 AM

Work Order: 17101025
Lab ID: 17101025-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		13	42	µg/Kg-dry	1	10/24/2017 01:42
1,1,2,2-Tetrachloroethane	U		11	35	µg/Kg-dry	1	10/24/2017 01:42
1,1,2-Trichloroethane	U		13	44	µg/Kg-dry	1	10/24/2017 01:42
1,1-Dichloroethane	U		11	37	µg/Kg-dry	1	10/24/2017 01:42
1,1-Dichloroethene	U		12	39	µg/Kg-dry	1	10/24/2017 01:42
1,2,3-Trichlorobenzene	U		19	65	µg/Kg-dry	1	10/24/2017 01:42
1,2,4-Trichlorobenzene	U		32	110	µg/Kg-dry	1	10/24/2017 01:42
1,2,4-Trimethylbenzene	U		8.8	30	µg/Kg-dry	1	10/24/2017 01:42
1,2-Dibromo-3-chloropropane	U		18	60	µg/Kg-dry	1	10/24/2017 01:42
1,2-Dibromoethane	U		15	49	µg/Kg-dry	1	10/24/2017 01:42
1,2-Dichlorobenzene	U		13	44	µg/Kg-dry	1	10/24/2017 01:42
1,2-Dichloroethane	U		12	40	µg/Kg-dry	1	10/24/2017 01:42
1,2-Dichloropropane	U		12	41	µg/Kg-dry	1	10/24/2017 01:42
1,3,5-Trimethylbenzene	U		19	64	µg/Kg-dry	1	10/24/2017 01:42
1,3-Dichlorobenzene	U		14	47	µg/Kg-dry	1	10/24/2017 01:42
1,4-Dichlorobenzene	U		12	38	µg/Kg-dry	1	10/24/2017 01:42
2-Butanone	U		59	200	µg/Kg-dry	1	10/24/2017 01:42
2-Hexanone	U		29	97	µg/Kg-dry	1	10/24/2017 01:42
4-Methyl-2-pentanone	U		32	110	µg/Kg-dry	1	10/24/2017 01:42
Benzene	U		10	33	µg/Kg-dry	1	10/24/2017 01:42
Bromochloromethane	U		20	66	µg/Kg-dry	1	10/24/2017 01:42
Bromodichloromethane	U		12	39	µg/Kg-dry	1	10/24/2017 01:42
Bromoform	U		16	52	µg/Kg-dry	1	10/24/2017 01:42
Bromomethane	U		19	64	µg/Kg-dry	1	10/24/2017 01:42
Carbon disulfide	U		15	50	µg/Kg-dry	1	10/24/2017 01:42
Carbon tetrachloride	U		7.8	26	µg/Kg-dry	1	10/24/2017 01:42
Chlorobenzene	U		13	44	µg/Kg-dry	1	10/24/2017 01:42
Chloroethane	U		28	94	µg/Kg-dry	1	10/24/2017 01:42
Chloroform	U		15	50	µg/Kg-dry	1	10/24/2017 01:42
Chloromethane	U		18	59	µg/Kg-dry	1	10/24/2017 01:42
cis-1,2-Dichloroethene	U		12	42	µg/Kg-dry	1	10/24/2017 01:42
cis-1,3-Dichloropropene	U		17	56	µg/Kg-dry	1	10/24/2017 01:42
Cyclohexane	U		22	73	µg/Kg-dry	1	10/24/2017 01:42
Dibromochloromethane	U		10	33	µg/Kg-dry	1	10/24/2017 01:42
Dichlorodifluoromethane	U		19	65	µg/Kg-dry	1	10/24/2017 01:42
Ethylbenzene	U		10	34	µg/Kg-dry	1	10/24/2017 01:42
Isopropylbenzene	U		17	57	µg/Kg-dry	1	10/24/2017 01:42
m,p-Xylene	U		20	66	µg/Kg-dry	1	10/24/2017 01:42

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-3 (4-5')
Collection Date: 10/12/2017 09:40 AM

Work Order: 17101025
Lab ID: 17101025-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		14	48	µg/Kg-dry	1	10/24/2017 01:42
Methylcyclohexane	U		19	64	µg/Kg-dry	1	10/24/2017 01:42
Methylene chloride	U		20	67	µg/Kg-dry	1	10/24/2017 01:42
Naphthalene	U		7.5	25	µg/Kg-dry	1	10/24/2017 01:42
o-Xylene	U		14	48	µg/Kg-dry	1	10/24/2017 01:42
Styrene	U		31	100	µg/Kg-dry	1	10/24/2017 01:42
Tetrachloroethene	U		22	72	µg/Kg-dry	1	10/24/2017 01:42
Toluene	U		15	49	µg/Kg-dry	1	10/24/2017 01:42
trans-1,2-Dichloroethene	U		12	42	µg/Kg-dry	1	10/24/2017 01:42
trans-1,3-Dichloropropene	U		7.9	26	µg/Kg-dry	1	10/24/2017 01:42
Trichloroethene	U		12	39	µg/Kg-dry	1	10/24/2017 01:42
Trichlorofluoromethane	U		8.5	28	µg/Kg-dry	1	10/24/2017 01:42
Vinyl chloride	U		14	47	µg/Kg-dry	1	10/24/2017 01:42
Xylenes, Total	U		34	110	µg/Kg-dry	1	10/24/2017 01:42
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	10/24/2017 01:42
Surr: 4-Bromofluorobenzene	95.4			70-130	%REC	1	10/24/2017 01:42
Surr: Dibromofluoromethane	95.2			70-130	%REC	1	10/24/2017 01:42
Surr: Toluene-d8	91.9			70-130	%REC	1	10/24/2017 01:42
MOISTURE			Method: SW3550C				Analyst: NW
Moisture	19		0.025	0.050	% of sample	1	10/19/2017 11:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-3 (9-10')
Collection Date: 10/12/2017 09:50 AM

Work Order: 17101025
Lab ID: 17101025-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		12	39	µg/Kg-dry	1	10/24/2017 02:07
1,1,2,2-Tetrachloroethane	U		9.9	33	µg/Kg-dry	1	10/24/2017 02:07
1,1,2-Trichloroethane	U		12	41	µg/Kg-dry	1	10/24/2017 02:07
1,1-Dichloroethane	U		10	35	µg/Kg-dry	1	10/24/2017 02:07
1,1-Dichloroethene	U		11	37	µg/Kg-dry	1	10/24/2017 02:07
1,2,3-Trichlorobenzene	U		18	60	µg/Kg-dry	1	10/24/2017 02:07
1,2,4-Trichlorobenzene	U		30	100	µg/Kg-dry	1	10/24/2017 02:07
1,2,4-Trimethylbenzene	U		8.2	27	µg/Kg-dry	1	10/24/2017 02:07
1,2-Dibromo-3-chloropropane	U		17	55	µg/Kg-dry	1	10/24/2017 02:07
1,2-Dibromoethane	U		14	46	µg/Kg-dry	1	10/24/2017 02:07
1,2-Dichlorobenzene	U		12	40	µg/Kg-dry	1	10/24/2017 02:07
1,2-Dichloroethane	U		11	37	µg/Kg-dry	1	10/24/2017 02:07
1,2-Dichloropropane	U		11	38	µg/Kg-dry	1	10/24/2017 02:07
1,3,5-Trimethylbenzene	U		18	60	µg/Kg-dry	1	10/24/2017 02:07
1,3-Dichlorobenzene	U		13	44	µg/Kg-dry	1	10/24/2017 02:07
1,4-Dichlorobenzene	U		11	36	µg/Kg-dry	1	10/24/2017 02:07
2-Butanone	U		55	180	µg/Kg-dry	1	10/24/2017 02:07
2-Hexanone	U		27	90	µg/Kg-dry	1	10/24/2017 02:07
4-Methyl-2-pentanone	U		30	100	µg/Kg-dry	1	10/24/2017 02:07
Benzene	U		9.2	31	µg/Kg-dry	1	10/24/2017 02:07
Bromochloromethane	U		18	61	µg/Kg-dry	1	10/24/2017 02:07
Bromodichloromethane	U		11	37	µg/Kg-dry	1	10/24/2017 02:07
Bromoform	U		14	48	µg/Kg-dry	1	10/24/2017 02:07
Bromomethane	U		18	59	µg/Kg-dry	1	10/24/2017 02:07
Carbon disulfide	U		14	46	µg/Kg-dry	1	10/24/2017 02:07
Carbon tetrachloride	U		7.3	24	µg/Kg-dry	1	10/24/2017 02:07
Chlorobenzene	U		12	41	µg/Kg-dry	1	10/24/2017 02:07
Chloroethane	U		26	87	µg/Kg-dry	1	10/24/2017 02:07
Chloroform	U		14	46	µg/Kg-dry	1	10/24/2017 02:07
Chloromethane	U		17	55	µg/Kg-dry	1	10/24/2017 02:07
cis-1,2-Dichloroethene	U		12	39	µg/Kg-dry	1	10/24/2017 02:07
cis-1,3-Dichloropropene	U		16	52	µg/Kg-dry	1	10/24/2017 02:07
Cyclohexane	U		20	68	µg/Kg-dry	1	10/24/2017 02:07
Dibromochloromethane	U		9.3	31	µg/Kg-dry	1	10/24/2017 02:07
Dichlorodifluoromethane	U		18	60	µg/Kg-dry	1	10/24/2017 02:07
Ethylbenzene	U		9.5	32	µg/Kg-dry	1	10/24/2017 02:07
Isopropylbenzene	U		16	53	µg/Kg-dry	1	10/24/2017 02:07
m,p-Xylene	U		18	61	µg/Kg-dry	1	10/24/2017 02:07

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-3 (9-10')
Collection Date: 10/12/2017 09:50 AM

Work Order: 17101025
Lab ID: 17101025-06
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		13	44	µg/Kg-dry	1	10/24/2017 02:07
Methylcyclohexane	U		18	59	µg/Kg-dry	1	10/24/2017 02:07
Methylene chloride	U		19	62	µg/Kg-dry	1	10/24/2017 02:07
Naphthalene	U		7.0	23	µg/Kg-dry	1	10/24/2017 02:07
o-Xylene	U		13	44	µg/Kg-dry	1	10/24/2017 02:07
Styrene	U		29	96	µg/Kg-dry	1	10/24/2017 02:07
Tetrachloroethene	U		20	67	µg/Kg-dry	1	10/24/2017 02:07
Toluene	U		14	45	µg/Kg-dry	1	10/24/2017 02:07
trans-1,2-Dichloroethene	U		12	39	µg/Kg-dry	1	10/24/2017 02:07
trans-1,3-Dichloropropene	U		7.3	24	µg/Kg-dry	1	10/24/2017 02:07
Trichloroethene	U		11	36	µg/Kg-dry	1	10/24/2017 02:07
Trichlorofluoromethane	U		7.9	26	µg/Kg-dry	1	10/24/2017 02:07
Vinyl chloride	U		13	43	µg/Kg-dry	1	10/24/2017 02:07
Xylenes, Total	U		32	110	µg/Kg-dry	1	10/24/2017 02:07
Surr: 1,2-Dichloroethane-d4	104			70-130	%REC	1	10/24/2017 02:07
Surr: 4-Bromofluorobenzene	95.6			70-130	%REC	1	10/24/2017 02:07
Surr: Dibromofluoromethane	96.1			70-130	%REC	1	10/24/2017 02:07
Surr: Toluene-d8	94.2			70-130	%REC	1	10/24/2017 02:07
MOISTURE			Method: SW3550C				Analyst: NW
Moisture	9.6		0.025	0.050	% of sample	1	10/19/2017 11:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-4 (2-3')
Collection Date: 10/12/2017 10:20 AM

Work Order: 17101025
Lab ID: 17101025-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		13	42	µg/Kg-dry	1	10/24/2017 02:31
1,1,2,2-Tetrachloroethane	U		11	36	µg/Kg-dry	1	10/24/2017 02:31
1,1,2-Trichloroethane	U		13	44	µg/Kg-dry	1	10/24/2017 02:31
1,1-Dichloroethane	U		11	38	µg/Kg-dry	1	10/24/2017 02:31
1,1-Dichloroethene	U		12	40	µg/Kg-dry	1	10/24/2017 02:31
1,2,3-Trichlorobenzene	U		20	65	µg/Kg-dry	1	10/24/2017 02:31
1,2,4-Trichlorobenzene	U		33	110	µg/Kg-dry	1	10/24/2017 02:31
1,2,4-Trimethylbenzene	U		9.0	30	µg/Kg-dry	1	10/24/2017 02:31
1,2-Dibromo-3-chloropropane	U		18	60	µg/Kg-dry	1	10/24/2017 02:31
1,2-Dibromoethane	U		15	50	µg/Kg-dry	1	10/24/2017 02:31
1,2-Dichlorobenzene	U		13	44	µg/Kg-dry	1	10/24/2017 02:31
1,2-Dichloroethane	U		12	40	µg/Kg-dry	1	10/24/2017 02:31
1,2-Dichloropropane	U		12	41	µg/Kg-dry	1	10/24/2017 02:31
1,3,5-Trimethylbenzene	U		20	65	µg/Kg-dry	1	10/24/2017 02:31
1,3-Dichlorobenzene	U		14	48	µg/Kg-dry	1	10/24/2017 02:31
1,4-Dichlorobenzene	U		12	39	µg/Kg-dry	1	10/24/2017 02:31
2-Butanone	U		60	200	µg/Kg-dry	1	10/24/2017 02:31
2-Hexanone	U		30	99	µg/Kg-dry	1	10/24/2017 02:31
4-Methyl-2-pentanone	U		33	110	µg/Kg-dry	1	10/24/2017 02:31
Benzene	U		10	34	µg/Kg-dry	1	10/24/2017 02:31
Bromochloromethane	U		20	66	µg/Kg-dry	1	10/24/2017 02:31
Bromodichloromethane	U		12	40	µg/Kg-dry	1	10/24/2017 02:31
Bromoform	U		16	53	µg/Kg-dry	1	10/24/2017 02:31
Bromomethane	U		19	64	µg/Kg-dry	1	10/24/2017 02:31
Carbon disulfide	U		15	50	µg/Kg-dry	1	10/24/2017 02:31
Carbon tetrachloride	U		7.9	26	µg/Kg-dry	1	10/24/2017 02:31
Chlorobenzene	U		13	45	µg/Kg-dry	1	10/24/2017 02:31
Chloroethane	U		28	95	µg/Kg-dry	1	10/24/2017 02:31
Chloroform	U		15	50	µg/Kg-dry	1	10/24/2017 02:31
Chloromethane	U		18	60	µg/Kg-dry	1	10/24/2017 02:31
cis-1,2-Dichloroethene	U		13	42	µg/Kg-dry	1	10/24/2017 02:31
cis-1,3-Dichloropropene	U		17	57	µg/Kg-dry	1	10/24/2017 02:31
Cyclohexane	U		22	74	µg/Kg-dry	1	10/24/2017 02:31
Dibromochloromethane	U		10	34	µg/Kg-dry	1	10/24/2017 02:31
Dichlorodifluoromethane	U		20	66	µg/Kg-dry	1	10/24/2017 02:31
Ethylbenzene	U		10	35	µg/Kg-dry	1	10/24/2017 02:31
Isopropylbenzene	U		17	58	µg/Kg-dry	1	10/24/2017 02:31
m,p-Xylene	U		20	67	µg/Kg-dry	1	10/24/2017 02:31

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-4 (2-3')
Collection Date: 10/12/2017 10:20 AM

Work Order: 17101025
Lab ID: 17101025-07
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		15	48	µg/Kg-dry	1	10/24/2017 02:31
Methylcyclohexane	U		19	64	µg/Kg-dry	1	10/24/2017 02:31
Methylene chloride	U		20	68	µg/Kg-dry	1	10/24/2017 02:31
Naphthalene	U		7.6	25	µg/Kg-dry	1	10/24/2017 02:31
o-Xylene	U		14	48	µg/Kg-dry	1	10/24/2017 02:31
Styrene	U		31	100	µg/Kg-dry	1	10/24/2017 02:31
Tetrachloroethene	U		22	73	µg/Kg-dry	1	10/24/2017 02:31
Toluene	U		15	49	µg/Kg-dry	1	10/24/2017 02:31
trans-1,2-Dichloroethene	U		13	42	µg/Kg-dry	1	10/24/2017 02:31
trans-1,3-Dichloropropene	U		8.0	27	µg/Kg-dry	1	10/24/2017 02:31
Trichloroethene	U		12	40	µg/Kg-dry	1	10/24/2017 02:31
Trichlorofluoromethane	U		8.6	29	µg/Kg-dry	1	10/24/2017 02:31
Vinyl chloride	U		14	47	µg/Kg-dry	1	10/24/2017 02:31
Xylenes, Total	U		35	110	µg/Kg-dry	1	10/24/2017 02:31
Surr: 1,2-Dichloroethane-d4	103			70-130	%REC	1	10/24/2017 02:31
Surr: 4-Bromofluorobenzene	97.2			70-130	%REC	1	10/24/2017 02:31
Surr: Dibromofluoromethane	95.2			70-130	%REC	1	10/24/2017 02:31
Surr: Toluene-d8	93.6			70-130	%REC	1	10/24/2017 02:31
MOISTURE			Method: SW3550C				Analyst: NW
Moisture	18		0.025	0.050	% of sample	1	10/19/2017 11:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-4 (7.5-8.5")
Collection Date: 10/12/2017 10:30 AM

Work Order: 17101025
Lab ID: 17101025-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		12	40	µg/Kg-dry	1	10/24/2017 02:55
1,1,2,2-Tetrachloroethane	U		10	34	µg/Kg-dry	1	10/24/2017 02:55
1,1,2-Trichloroethane	U		13	42	µg/Kg-dry	1	10/24/2017 02:55
1,1-Dichloroethane	U		11	36	µg/Kg-dry	1	10/24/2017 02:55
1,1-Dichloroethene	U		11	38	µg/Kg-dry	1	10/24/2017 02:55
1,2,3-Trichlorobenzene	U		19	62	µg/Kg-dry	1	10/24/2017 02:55
1,2,4-Trichlorobenzene	U		31	100	µg/Kg-dry	1	10/24/2017 02:55
1,2,4-Trimethylbenzene	U		8.5	28	µg/Kg-dry	1	10/24/2017 02:55
1,2-Dibromo-3-chloropropane	U		17	57	µg/Kg-dry	1	10/24/2017 02:55
1,2-Dibromoethane	U		14	47	µg/Kg-dry	1	10/24/2017 02:55
1,2-Dichlorobenzene	U		13	42	µg/Kg-dry	1	10/24/2017 02:55
1,2-Dichloroethane	U		12	38	µg/Kg-dry	1	10/24/2017 02:55
1,2-Dichloropropane	U		12	39	µg/Kg-dry	1	10/24/2017 02:55
1,3,5-Trimethylbenzene	U		19	62	µg/Kg-dry	1	10/24/2017 02:55
1,3-Dichlorobenzene	U		14	45	µg/Kg-dry	1	10/24/2017 02:55
1,4-Dichlorobenzene	U		11	37	µg/Kg-dry	1	10/24/2017 02:55
2-Butanone	U		57	190	µg/Kg-dry	1	10/24/2017 02:55
2-Hexanone	U		28	93	µg/Kg-dry	1	10/24/2017 02:55
4-Methyl-2-pentanone	U		31	100	µg/Kg-dry	1	10/24/2017 02:55
Benzene	U		9.6	32	µg/Kg-dry	1	10/24/2017 02:55
Bromochloromethane	U		19	63	µg/Kg-dry	1	10/24/2017 02:55
Bromodichloromethane	U		11	38	µg/Kg-dry	1	10/24/2017 02:55
Bromoform	U		15	50	µg/Kg-dry	1	10/24/2017 02:55
Bromomethane	U		18	61	µg/Kg-dry	1	10/24/2017 02:55
Carbon disulfide	U		14	48	µg/Kg-dry	1	10/24/2017 02:55
Carbon tetrachloride	U		7.5	25	µg/Kg-dry	1	10/24/2017 02:55
Chlorobenzene	U		13	42	µg/Kg-dry	1	10/24/2017 02:55
Chloroethane	U		27	90	µg/Kg-dry	1	10/24/2017 02:55
Chloroform	U		14	48	µg/Kg-dry	1	10/24/2017 02:55
Chloromethane	U		17	57	µg/Kg-dry	1	10/24/2017 02:55
cis-1,2-Dichloroethene	U		12	40	µg/Kg-dry	1	10/24/2017 02:55
cis-1,3-Dichloropropene	U		16	54	µg/Kg-dry	1	10/24/2017 02:55
Cyclohexane	U		21	70	µg/Kg-dry	1	10/24/2017 02:55
Dibromochloromethane	U		9.6	32	µg/Kg-dry	1	10/24/2017 02:55
Dichlorodifluoromethane	U		19	62	µg/Kg-dry	1	10/24/2017 02:55
Ethylbenzene	U		9.9	33	µg/Kg-dry	1	10/24/2017 02:55
Isopropylbenzene	U		17	55	µg/Kg-dry	1	10/24/2017 02:55
m,p-Xylene	U		19	63	µg/Kg-dry	1	10/24/2017 02:55

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-4 (7.5-8.5")
Collection Date: 10/12/2017 10:30 AM

Work Order: 17101025
Lab ID: 17101025-08
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		14	46	µg/Kg-dry	1	10/24/2017 02:55
Methylcyclohexane	U		18	61	µg/Kg-dry	1	10/24/2017 02:55
Methylene chloride	U		19	64	µg/Kg-dry	1	10/24/2017 02:55
Naphthalene	U		7.2	24	µg/Kg-dry	1	10/24/2017 02:55
o-Xylene	U		14	46	µg/Kg-dry	1	10/24/2017 02:55
Styrene	U		30	100	µg/Kg-dry	1	10/24/2017 02:55
Tetrachloroethene	U		21	69	µg/Kg-dry	1	10/24/2017 02:55
Toluene	U		14	47	µg/Kg-dry	1	10/24/2017 02:55
trans-1,2-Dichloroethene	U		12	40	µg/Kg-dry	1	10/24/2017 02:55
trans-1,3-Dichloropropene	U		7.6	25	µg/Kg-dry	1	10/24/2017 02:55
Trichloroethene	U		11	38	µg/Kg-dry	1	10/24/2017 02:55
Trichlorofluoromethane	U		8.1	27	µg/Kg-dry	1	10/24/2017 02:55
Vinyl chloride	U		13	45	µg/Kg-dry	1	10/24/2017 02:55
Xylenes, Total	U		33	110	µg/Kg-dry	1	10/24/2017 02:55
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	10/24/2017 02:55
Surr: 4-Bromofluorobenzene	96.2			70-130	%REC	1	10/24/2017 02:55
Surr: Dibromofluoromethane	92.8			70-130	%REC	1	10/24/2017 02:55
Surr: Toluene-d8	92.4			70-130	%REC	1	10/24/2017 02:55
MOISTURE			Method: SW3550C				Analyst: NW
Moisture	17		0.025	0.050	% of sample	1	10/19/2017 11:22

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-5 (4-5')
Collection Date: 10/12/2017 11:10 AM

Work Order: 17101025
Lab ID: 17101025-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		11	37	µg/Kg-dry	1	10/24/2017 03:19
1,1,2,2-Tetrachloroethane	U		9.4	31	µg/Kg-dry	1	10/24/2017 03:19
1,1,2-Trichloroethane	U		12	39	µg/Kg-dry	1	10/24/2017 03:19
1,1-Dichloroethane	U		9.9	33	µg/Kg-dry	1	10/24/2017 03:19
1,1-Dichloroethene	U		10	35	µg/Kg-dry	1	10/24/2017 03:19
1,2,3-Trichlorobenzene	U		17	57	µg/Kg-dry	1	10/24/2017 03:19
1,2,4-Trichlorobenzene	U		29	96	µg/Kg-dry	1	10/24/2017 03:19
1,2,4-Trimethylbenzene	U		7.8	26	µg/Kg-dry	1	10/24/2017 03:19
1,2-Dibromo-3-chloropropane	U		16	53	µg/Kg-dry	1	10/24/2017 03:19
1,2-Dibromoethane	U		13	43	µg/Kg-dry	1	10/24/2017 03:19
1,2-Dichlorobenzene	U		12	39	µg/Kg-dry	1	10/24/2017 03:19
1,2-Dichloroethane	U		11	35	µg/Kg-dry	1	10/24/2017 03:19
1,2-Dichloropropane	U		11	36	µg/Kg-dry	1	10/24/2017 03:19
1,3,5-Trimethylbenzene	U		17	57	µg/Kg-dry	1	10/24/2017 03:19
1,3-Dichlorobenzene	U		13	42	µg/Kg-dry	1	10/24/2017 03:19
1,4-Dichlorobenzene	U		10	34	µg/Kg-dry	1	10/24/2017 03:19
2-Butanone	U		52	170	µg/Kg-dry	1	10/24/2017 03:19
2-Hexanone	U		26	86	µg/Kg-dry	1	10/24/2017 03:19
4-Methyl-2-pentanone	U		28	95	µg/Kg-dry	1	10/24/2017 03:19
Benzene	U		8.8	29	µg/Kg-dry	1	10/24/2017 03:19
Bromochloromethane	U		17	58	µg/Kg-dry	1	10/24/2017 03:19
Bromodichloromethane	U		10	35	µg/Kg-dry	1	10/24/2017 03:19
Bromoform	U		14	46	µg/Kg-dry	1	10/24/2017 03:19
Bromomethane	U		17	56	µg/Kg-dry	1	10/24/2017 03:19
Carbon disulfide	U		13	44	µg/Kg-dry	1	10/24/2017 03:19
Carbon tetrachloride	U		6.9	23	µg/Kg-dry	1	10/24/2017 03:19
Chlorobenzene	U		12	39	µg/Kg-dry	1	10/24/2017 03:19
Chloroethane	U		25	83	µg/Kg-dry	1	10/24/2017 03:19
Chloroform	U		13	44	µg/Kg-dry	1	10/24/2017 03:19
Chloromethane	U		16	52	µg/Kg-dry	1	10/24/2017 03:19
cis-1,2-Dichloroethene	U		11	37	µg/Kg-dry	1	10/24/2017 03:19
cis-1,3-Dichloropropene	U		15	50	µg/Kg-dry	1	10/24/2017 03:19
Cyclohexane	U		19	65	µg/Kg-dry	1	10/24/2017 03:19
Dibromochloromethane	U		8.9	30	µg/Kg-dry	1	10/24/2017 03:19
Dichlorodifluoromethane	U		17	57	µg/Kg-dry	1	10/24/2017 03:19
Ethylbenzene	U		9.1	30	µg/Kg-dry	1	10/24/2017 03:19
Isopropylbenzene	U		15	51	µg/Kg-dry	1	10/24/2017 03:19
m,p-Xylene	U		18	58	µg/Kg-dry	1	10/24/2017 03:19

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-5 (4-5')
Collection Date: 10/12/2017 11:10 AM

Work Order: 17101025
Lab ID: 17101025-09
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		13	42	µg/Kg-dry	1	10/24/2017 03:19
Methylcyclohexane	U		17	56	µg/Kg-dry	1	10/24/2017 03:19
Methylene chloride	U		18	59	µg/Kg-dry	1	10/24/2017 03:19
Naphthalene	U		6.7	22	µg/Kg-dry	1	10/24/2017 03:19
o-Xylene	U		13	42	µg/Kg-dry	1	10/24/2017 03:19
Styrene	U		27	92	µg/Kg-dry	1	10/24/2017 03:19
Tetrachloroethene	U		19	64	µg/Kg-dry	1	10/24/2017 03:19
Toluene	U		13	43	µg/Kg-dry	1	10/24/2017 03:19
trans-1,2-Dichloroethene	U		11	37	µg/Kg-dry	1	10/24/2017 03:19
trans-1,3-Dichloropropene	U		7.0	23	µg/Kg-dry	1	10/24/2017 03:19
Trichloroethene	U		10	35	µg/Kg-dry	1	10/24/2017 03:19
Trichlorofluoromethane	U		7.5	25	µg/Kg-dry	1	10/24/2017 03:19
Vinyl chloride	U		12	41	µg/Kg-dry	1	10/24/2017 03:19
Xylenes, Total	U		30	100	µg/Kg-dry	1	10/24/2017 03:19
Surr: 1,2-Dichloroethane-d4	107			70-130	%REC	1	10/24/2017 03:19
Surr: 4-Bromofluorobenzene	96.4			70-130	%REC	1	10/24/2017 03:19
Surr: Dibromofluoromethane	96.4			70-130	%REC	1	10/24/2017 03:19
Surr: Toluene-d8	93.2			70-130	%REC	1	10/24/2017 03:19
MOISTURE			Method: SW3550C				Analyst: MT
Moisture	13		0.025	0.050	% of sample	1	10/19/2017 12:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-5 (9-10')
Collection Date: 10/12/2017 11:20 AM

Work Order: 17101025
Lab ID: 17101025-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		11	36	µg/Kg-dry	1	10/24/2017 03:43
1,1,2,2-Tetrachloroethane	U		9.2	31	µg/Kg-dry	1	10/24/2017 03:43
1,1,2-Trichloroethane	U		11	38	µg/Kg-dry	1	10/24/2017 03:43
1,1-Dichloroethane	U		9.7	32	µg/Kg-dry	1	10/24/2017 03:43
1,1-Dichloroethene	U		10	34	µg/Kg-dry	1	10/24/2017 03:43
1,2,3-Trichlorobenzene	U		17	56	µg/Kg-dry	1	10/24/2017 03:43
1,2,4-Trichlorobenzene	U		28	94	µg/Kg-dry	1	10/24/2017 03:43
1,2,4-Trimethylbenzene	U		7.7	26	µg/Kg-dry	1	10/24/2017 03:43
1,2-Dibromo-3-chloropropane	U		15	52	µg/Kg-dry	1	10/24/2017 03:43
1,2-Dibromoethane	U		13	43	µg/Kg-dry	1	10/24/2017 03:43
1,2-Dichlorobenzene	U		11	38	µg/Kg-dry	1	10/24/2017 03:43
1,2-Dichloroethane	U		10	35	µg/Kg-dry	1	10/24/2017 03:43
1,2-Dichloropropane	U		11	35	µg/Kg-dry	1	10/24/2017 03:43
1,3,5-Trimethylbenzene	U		17	56	µg/Kg-dry	1	10/24/2017 03:43
1,3-Dichlorobenzene	U		12	41	µg/Kg-dry	1	10/24/2017 03:43
1,4-Dichlorobenzene	U		10	33	µg/Kg-dry	1	10/24/2017 03:43
2-Butanone	U		51	170	µg/Kg-dry	1	10/24/2017 03:43
2-Hexanone	U		25	84	µg/Kg-dry	1	10/24/2017 03:43
4-Methyl-2-pentanone	U		28	93	µg/Kg-dry	1	10/24/2017 03:43
Benzene	U		8.6	29	µg/Kg-dry	1	10/24/2017 03:43
Bromochloromethane	U		17	57	µg/Kg-dry	1	10/24/2017 03:43
Bromodichloromethane	U		10	34	µg/Kg-dry	1	10/24/2017 03:43
Bromoform	U		14	45	µg/Kg-dry	1	10/24/2017 03:43
Bromomethane	U		17	55	µg/Kg-dry	1	10/24/2017 03:43
Carbon disulfide	U		13	43	µg/Kg-dry	1	10/24/2017 03:43
Carbon tetrachloride	U		6.8	23	µg/Kg-dry	1	10/24/2017 03:43
Chlorobenzene	U		11	38	µg/Kg-dry	1	10/24/2017 03:43
Chloroethane	U		24	81	µg/Kg-dry	1	10/24/2017 03:43
Chloroform	U		13	43	µg/Kg-dry	1	10/24/2017 03:43
Chloromethane	U		15	51	µg/Kg-dry	1	10/24/2017 03:43
cis-1,2-Dichloroethene	U		11	36	µg/Kg-dry	1	10/24/2017 03:43
cis-1,3-Dichloropropene	U		15	49	µg/Kg-dry	1	10/24/2017 03:43
Cyclohexane	U		19	64	µg/Kg-dry	1	10/24/2017 03:43
Dibromochloromethane	U		8.7	29	µg/Kg-dry	1	10/24/2017 03:43
Dichlorodifluoromethane	U		17	56	µg/Kg-dry	1	10/24/2017 03:43
Ethylbenzene	U		8.9	30	µg/Kg-dry	1	10/24/2017 03:43
Isopropylbenzene	U		15	50	µg/Kg-dry	1	10/24/2017 03:43
m,p-Xylene	U		17	57	µg/Kg-dry	1	10/24/2017 03:43

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-5 (9-10')
Collection Date: 10/12/2017 11:20 AM

Work Order: 17101025
Lab ID: 17101025-10
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		12	41	µg/Kg-dry	1	10/24/2017 03:43
Methylcyclohexane	U		17	55	µg/Kg-dry	1	10/24/2017 03:43
Methylene chloride	U		17	58	µg/Kg-dry	1	10/24/2017 03:43
Naphthalene	U		6.5	22	µg/Kg-dry	1	10/24/2017 03:43
o-Xylene	U		12	41	µg/Kg-dry	1	10/24/2017 03:43
Styrene	U		27	90	µg/Kg-dry	1	10/24/2017 03:43
Tetrachloroethene	U		19	63	µg/Kg-dry	1	10/24/2017 03:43
Toluene	U		13	42	µg/Kg-dry	1	10/24/2017 03:43
trans-1,2-Dichloroethene	U		11	36	µg/Kg-dry	1	10/24/2017 03:43
trans-1,3-Dichloropropene	U		6.8	23	µg/Kg-dry	1	10/24/2017 03:43
Trichloroethene	U		10	34	µg/Kg-dry	1	10/24/2017 03:43
Trichlorofluoromethane	U		7.3	24	µg/Kg-dry	1	10/24/2017 03:43
Vinyl chloride	U		12	40	µg/Kg-dry	1	10/24/2017 03:43
Xylenes, Total	U		30	98	µg/Kg-dry	1	10/24/2017 03:43
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	10/24/2017 03:43
Surr: 4-Bromofluorobenzene	97.1			70-130	%REC	1	10/24/2017 03:43
Surr: Dibromofluoromethane	96.0			70-130	%REC	1	10/24/2017 03:43
Surr: Toluene-d8	92.4			70-130	%REC	1	10/24/2017 03:43
MOISTURE			Method: SW3550C				Analyst: MT
Moisture	12		0.025	0.050	% of sample	1	10/19/2017 12:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-6 (4-5')
Collection Date: 10/12/2017 12:15 PM

Work Order: 17101025
Lab ID: 17101025-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		11	36	µg/Kg-dry	1	10/24/2017 04:08
1,1,2,2-Tetrachloroethane	U		9.3	31	µg/Kg-dry	1	10/24/2017 04:08
1,1,2-Trichloroethane	U		11	38	µg/Kg-dry	1	10/24/2017 04:08
1,1-Dichloroethane	U		9.8	32	µg/Kg-dry	1	10/24/2017 04:08
1,1-Dichloroethene	U		10	34	µg/Kg-dry	1	10/24/2017 04:08
1,2,3-Trichlorobenzene	U		17	56	µg/Kg-dry	1	10/24/2017 04:08
1,2,4-Trichlorobenzene	U		28	94	µg/Kg-dry	1	10/24/2017 04:08
1,2,4-Trimethylbenzene	U		7.7	26	µg/Kg-dry	1	10/24/2017 04:08
1,2-Dibromo-3-chloropropane	U		16	52	µg/Kg-dry	1	10/24/2017 04:08
1,2-Dibromoethane	U		13	43	µg/Kg-dry	1	10/24/2017 04:08
1,2-Dichlorobenzene	U		11	38	µg/Kg-dry	1	10/24/2017 04:08
1,2-Dichloroethane	U		10	35	µg/Kg-dry	1	10/24/2017 04:08
1,2-Dichloropropane	U		11	35	µg/Kg-dry	1	10/24/2017 04:08
1,3,5-Trimethylbenzene	U		17	56	µg/Kg-dry	1	10/24/2017 04:08
1,3-Dichlorobenzene	U		12	41	µg/Kg-dry	1	10/24/2017 04:08
1,4-Dichlorobenzene	U		10	33	µg/Kg-dry	1	10/24/2017 04:08
2-Butanone	U		52	170	µg/Kg-dry	1	10/24/2017 04:08
2-Hexanone	U		25	85	µg/Kg-dry	1	10/24/2017 04:08
4-Methyl-2-pentanone	U		28	93	µg/Kg-dry	1	10/24/2017 04:08
Benzene	U		8.7	29	µg/Kg-dry	1	10/24/2017 04:08
Bromochloromethane	U		17	57	µg/Kg-dry	1	10/24/2017 04:08
Bromodichloromethane	U		10	34	µg/Kg-dry	1	10/24/2017 04:08
Bromoform	U		14	45	µg/Kg-dry	1	10/24/2017 04:08
Bromomethane	U		17	55	µg/Kg-dry	1	10/24/2017 04:08
Carbon disulfide	U		13	43	µg/Kg-dry	1	10/24/2017 04:08
Carbon tetrachloride	U		6.8	23	µg/Kg-dry	1	10/24/2017 04:08
Chlorobenzene	U		12	38	µg/Kg-dry	1	10/24/2017 04:08
Chloroethane	U		24	81	µg/Kg-dry	1	10/24/2017 04:08
Chloroform	U		13	43	µg/Kg-dry	1	10/24/2017 04:08
Chloromethane	U		16	52	µg/Kg-dry	1	10/24/2017 04:08
cis-1,2-Dichloroethene	U		11	36	µg/Kg-dry	1	10/24/2017 04:08
cis-1,3-Dichloropropene	U		15	49	µg/Kg-dry	1	10/24/2017 04:08
Cyclohexane	U		19	64	µg/Kg-dry	1	10/24/2017 04:08
Dibromochloromethane	U		8.7	29	µg/Kg-dry	1	10/24/2017 04:08
Dichlorodifluoromethane	U		17	57	µg/Kg-dry	1	10/24/2017 04:08
Ethylbenzene	U		8.9	30	µg/Kg-dry	1	10/24/2017 04:08
Isopropylbenzene	U		15	50	µg/Kg-dry	1	10/24/2017 04:08
m,p-Xylene	U		17	57	µg/Kg-dry	1	10/24/2017 04:08

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-6 (4-5')
Collection Date: 10/12/2017 12:15 PM

Work Order: 17101025
Lab ID: 17101025-11
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		12	42	µg/Kg-dry	1	10/24/2017 04:08
Methylcyclohexane	U		17	55	µg/Kg-dry	1	10/24/2017 04:08
Methylene chloride	U		18	58	µg/Kg-dry	1	10/24/2017 04:08
Naphthalene	U		6.5	22	µg/Kg-dry	1	10/24/2017 04:08
o-Xylene	U		12	41	µg/Kg-dry	1	10/24/2017 04:08
Styrene	U		27	90	µg/Kg-dry	1	10/24/2017 04:08
Tetrachloroethene	190		19	63	µg/Kg-dry	1	10/24/2017 04:08
Toluene	U		13	42	µg/Kg-dry	1	10/24/2017 04:08
trans-1,2-Dichloroethene	U		11	36	µg/Kg-dry	1	10/24/2017 04:08
trans-1,3-Dichloropropene	U		6.9	23	µg/Kg-dry	1	10/24/2017 04:08
Trichloroethene	U		10	34	µg/Kg-dry	1	10/24/2017 04:08
Trichlorofluoromethane	U		7.4	25	µg/Kg-dry	1	10/24/2017 04:08
Vinyl chloride	U		12	41	µg/Kg-dry	1	10/24/2017 04:08
Xylenes, Total	U		30	99	µg/Kg-dry	1	10/24/2017 04:08
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	10/24/2017 04:08
Surr: 4-Bromofluorobenzene	96.2			70-130	%REC	1	10/24/2017 04:08
Surr: Dibromofluoromethane	94.2			70-130	%REC	1	10/24/2017 04:08
Surr: Toluene-d8	91.8			70-130	%REC	1	10/24/2017 04:08
MOISTURE			Method: SW3550C				Analyst: MT
Moisture	11		0.025	0.050	% of sample	1	10/19/2017 12:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-6 (10-11')
Collection Date: 10/12/2017 12:50 PM

Work Order: 17101025
Lab ID: 17101025-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		12	39	µg/Kg-dry	1	10/24/2017 04:32
1,1,2,2-Tetrachloroethane	U		10	33	µg/Kg-dry	1	10/24/2017 04:32
1,1,2-Trichloroethane	U		12	41	µg/Kg-dry	1	10/24/2017 04:32
1,1-Dichloroethane	U		11	35	µg/Kg-dry	1	10/24/2017 04:32
1,1-Dichloroethene	U		11	37	µg/Kg-dry	1	10/24/2017 04:32
1,2,3-Trichlorobenzene	U		18	61	µg/Kg-dry	1	10/24/2017 04:32
1,2,4-Trichlorobenzene	U		31	100	µg/Kg-dry	1	10/24/2017 04:32
1,2,4-Trimethylbenzene	U		8.3	28	µg/Kg-dry	1	10/24/2017 04:32
1,2-Dibromo-3-chloropropane	U		17	56	µg/Kg-dry	1	10/24/2017 04:32
1,2-Dibromoethane	U		14	46	µg/Kg-dry	1	10/24/2017 04:32
1,2-Dichlorobenzene	U		12	41	µg/Kg-dry	1	10/24/2017 04:32
1,2-Dichloroethane	U		11	38	µg/Kg-dry	1	10/24/2017 04:32
1,2-Dichloropropane	U		11	38	µg/Kg-dry	1	10/24/2017 04:32
1,3,5-Trimethylbenzene	U		18	60	µg/Kg-dry	1	10/24/2017 04:32
1,3-Dichlorobenzene	U		13	44	µg/Kg-dry	1	10/24/2017 04:32
1,4-Dichlorobenzene	U		11	36	µg/Kg-dry	1	10/24/2017 04:32
2-Butanone	U		56	190	µg/Kg-dry	1	10/24/2017 04:32
2-Hexanone	U		27	92	µg/Kg-dry	1	10/24/2017 04:32
4-Methyl-2-pentanone	U		30	100	µg/Kg-dry	1	10/24/2017 04:32
Benzene	U		9.4	31	µg/Kg-dry	1	10/24/2017 04:32
Bromochloromethane	U		19	62	µg/Kg-dry	1	10/24/2017 04:32
Bromodichloromethane	U		11	37	µg/Kg-dry	1	10/24/2017 04:32
Bromoform	U		15	49	µg/Kg-dry	1	10/24/2017 04:32
Bromomethane	U		18	60	µg/Kg-dry	1	10/24/2017 04:32
Carbon disulfide	U		14	47	µg/Kg-dry	1	10/24/2017 04:32
Carbon tetrachloride	U		7.3	24	µg/Kg-dry	1	10/24/2017 04:32
Chlorobenzene	U		12	41	µg/Kg-dry	1	10/24/2017 04:32
Chloroethane	U		26	88	µg/Kg-dry	1	10/24/2017 04:32
Chloroform	U		14	47	µg/Kg-dry	1	10/24/2017 04:32
Chloromethane	U		17	56	µg/Kg-dry	1	10/24/2017 04:32
cis-1,2-Dichloroethene	U		12	39	µg/Kg-dry	1	10/24/2017 04:32
cis-1,3-Dichloropropene	U		16	53	µg/Kg-dry	1	10/24/2017 04:32
Cyclohexane	U		21	69	µg/Kg-dry	1	10/24/2017 04:32
Dibromochloromethane	U		9.4	31	µg/Kg-dry	1	10/24/2017 04:32
Dichlorodifluoromethane	U		18	61	µg/Kg-dry	1	10/24/2017 04:32
Ethylbenzene	U		9.7	32	µg/Kg-dry	1	10/24/2017 04:32
Isopropylbenzene	U		16	54	µg/Kg-dry	1	10/24/2017 04:32
m,p-Xylene	U		19	62	µg/Kg-dry	1	10/24/2017 04:32

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-6 (10-11')
Collection Date: 10/12/2017 12:50 PM

Work Order: 17101025
Lab ID: 17101025-12
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		13	45	µg/Kg-dry	1	10/24/2017 04:32
Methylcyclohexane	U		18	60	µg/Kg-dry	1	10/24/2017 04:32
Methylene chloride	U		19	63	µg/Kg-dry	1	10/24/2017 04:32
Naphthalene	U		7.1	24	µg/Kg-dry	1	10/24/2017 04:32
o-Xylene	U		13	45	µg/Kg-dry	1	10/24/2017 04:32
Styrene	U		29	97	µg/Kg-dry	1	10/24/2017 04:32
Tetrachloroethene	950		20	68	µg/Kg-dry	1	10/24/2017 04:32
Toluene	U		14	46	µg/Kg-dry	1	10/24/2017 04:32
trans-1,2-Dichloroethene	U		12	39	µg/Kg-dry	1	10/24/2017 04:32
trans-1,3-Dichloropropene	U		7.4	25	µg/Kg-dry	1	10/24/2017 04:32
Trichloroethene	U		11	37	µg/Kg-dry	1	10/24/2017 04:32
Trichlorofluoromethane	U		8.0	27	µg/Kg-dry	1	10/24/2017 04:32
Vinyl chloride	U		13	44	µg/Kg-dry	1	10/24/2017 04:32
Xylenes, Total	U		32	110	µg/Kg-dry	1	10/24/2017 04:32
Surr: 1,2-Dichloroethane-d4	104			70-130	%REC	1	10/24/2017 04:32
Surr: 4-Bromofluorobenzene	96.7			70-130	%REC	1	10/24/2017 04:32
Surr: Dibromofluoromethane	94.7			70-130	%REC	1	10/24/2017 04:32
Surr: Toluene-d8	92.8			70-130	%REC	1	10/24/2017 04:32
MOISTURE			Method: SW3550C				Analyst: MT
Moisture	16		0.025	0.050	% of sample	1	10/19/2017 12:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-7 (4-5')
Collection Date: 10/12/2017 01:25 PM

Work Order: 17101025
Lab ID: 17101025-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		12	39	µg/Kg-dry	1	10/24/2017 04:56
1,1,2,2-Tetrachloroethane	U		10	33	µg/Kg-dry	1	10/24/2017 04:56
1,1,2-Trichloroethane	U		12	41	µg/Kg-dry	1	10/24/2017 04:56
1,1-Dichloroethane	U		11	35	µg/Kg-dry	1	10/24/2017 04:56
1,1-Dichloroethene	U		11	37	µg/Kg-dry	1	10/24/2017 04:56
1,2,3-Trichlorobenzene	U		18	61	µg/Kg-dry	1	10/24/2017 04:56
1,2,4-Trichlorobenzene	U		31	100	µg/Kg-dry	1	10/24/2017 04:56
1,2,4-Trimethylbenzene	U		8.3	28	µg/Kg-dry	1	10/24/2017 04:56
1,2-Dibromo-3-chloropropane	U		17	56	µg/Kg-dry	1	10/24/2017 04:56
1,2-Dibromoethane	U		14	46	µg/Kg-dry	1	10/24/2017 04:56
1,2-Dichlorobenzene	U		12	41	µg/Kg-dry	1	10/24/2017 04:56
1,2-Dichloroethane	U		11	38	µg/Kg-dry	1	10/24/2017 04:56
1,2-Dichloropropane	U		11	38	µg/Kg-dry	1	10/24/2017 04:56
1,3,5-Trimethylbenzene	U		18	60	µg/Kg-dry	1	10/24/2017 04:56
1,3-Dichlorobenzene	U		13	44	µg/Kg-dry	1	10/24/2017 04:56
1,4-Dichlorobenzene	U		11	36	µg/Kg-dry	1	10/24/2017 04:56
2-Butanone	U		56	190	µg/Kg-dry	1	10/24/2017 04:56
2-Hexanone	U		27	92	µg/Kg-dry	1	10/24/2017 04:56
4-Methyl-2-pentanone	U		30	100	µg/Kg-dry	1	10/24/2017 04:56
Benzene	U		9.4	31	µg/Kg-dry	1	10/24/2017 04:56
Bromochloromethane	U		19	62	µg/Kg-dry	1	10/24/2017 04:56
Bromodichloromethane	U		11	37	µg/Kg-dry	1	10/24/2017 04:56
Bromoform	U		15	49	µg/Kg-dry	1	10/24/2017 04:56
Bromomethane	U		18	60	µg/Kg-dry	1	10/24/2017 04:56
Carbon disulfide	U		14	47	µg/Kg-dry	1	10/24/2017 04:56
Carbon tetrachloride	U		7.3	24	µg/Kg-dry	1	10/24/2017 04:56
Chlorobenzene	U		12	41	µg/Kg-dry	1	10/24/2017 04:56
Chloroethane	U		26	88	µg/Kg-dry	1	10/24/2017 04:56
Chloroform	U		14	47	µg/Kg-dry	1	10/24/2017 04:56
Chloromethane	U		17	56	µg/Kg-dry	1	10/24/2017 04:56
cis-1,2-Dichloroethene	U		12	39	µg/Kg-dry	1	10/24/2017 04:56
cis-1,3-Dichloropropene	U		16	53	µg/Kg-dry	1	10/24/2017 04:56
Cyclohexane	U		21	69	µg/Kg-dry	1	10/24/2017 04:56
Dibromochloromethane	U		9.4	31	µg/Kg-dry	1	10/24/2017 04:56
Dichlorodifluoromethane	U		18	61	µg/Kg-dry	1	10/24/2017 04:56
Ethylbenzene	U		9.7	32	µg/Kg-dry	1	10/24/2017 04:56
Isopropylbenzene	U		16	54	µg/Kg-dry	1	10/24/2017 04:56
m,p-Xylene	U		19	62	µg/Kg-dry	1	10/24/2017 04:56

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-7 (4-5')
Collection Date: 10/12/2017 01:25 PM

Work Order: 17101025
Lab ID: 17101025-13
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		13	45	µg/Kg-dry	1	10/24/2017 04:56
Methylcyclohexane	U		18	60	µg/Kg-dry	1	10/24/2017 04:56
Methylene chloride	U		19	63	µg/Kg-dry	1	10/24/2017 04:56
Naphthalene	U		7.1	24	µg/Kg-dry	1	10/24/2017 04:56
o-Xylene	U		13	45	µg/Kg-dry	1	10/24/2017 04:56
Styrene	U		29	97	µg/Kg-dry	1	10/24/2017 04:56
Tetrachloroethene	U		20	68	µg/Kg-dry	1	10/24/2017 04:56
Toluene	U		14	46	µg/Kg-dry	1	10/24/2017 04:56
trans-1,2-Dichloroethene	U		12	39	µg/Kg-dry	1	10/24/2017 04:56
trans-1,3-Dichloropropene	U		7.4	25	µg/Kg-dry	1	10/24/2017 04:56
Trichloroethene	U		11	37	µg/Kg-dry	1	10/24/2017 04:56
Trichlorofluoromethane	U		8.0	27	µg/Kg-dry	1	10/24/2017 04:56
Vinyl chloride	U		13	44	µg/Kg-dry	1	10/24/2017 04:56
Xylenes, Total	U		32	110	µg/Kg-dry	1	10/24/2017 04:56
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	10/24/2017 04:56
Surr: 4-Bromofluorobenzene	96.6			70-130	%REC	1	10/24/2017 04:56
Surr: Dibromofluoromethane	93.2			70-130	%REC	1	10/24/2017 04:56
Surr: Toluene-d8	93.2			70-130	%REC	1	10/24/2017 04:56
MOISTURE			Method: SW3550C				Analyst: MT
Moisture	16		0.025	0.050	% of sample	1	10/19/2017 12:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-7 (8-9')
Collection Date: 10/12/2017 01:30 PM

Work Order: 17101025
Lab ID: 17101025-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS		Method: SW8260B		Prep: SW5035 / 10/19/17		Analyst: BG	
1,1,1-Trichloroethane	U		10	34	µg/Kg-dry	1	10/24/2017 05:20
1,1,2,2-Tetrachloroethane	U		8.7	29	µg/Kg-dry	1	10/24/2017 05:20
1,1,2-Trichloroethane	U		11	36	µg/Kg-dry	1	10/24/2017 05:20
1,1-Dichloroethane	U		9.1	30	µg/Kg-dry	1	10/24/2017 05:20
1,1-Dichloroethene	U		9.6	32	µg/Kg-dry	1	10/24/2017 05:20
1,2,3-Trichlorobenzene	U		16	53	µg/Kg-dry	1	10/24/2017 05:20
1,2,4-Trichlorobenzene	U		26	88	µg/Kg-dry	1	10/24/2017 05:20
1,2,4-Trimethylbenzene	U		7.2	24	µg/Kg-dry	1	10/24/2017 05:20
1,2-Dibromo-3-chloropropane	U		15	49	µg/Kg-dry	1	10/24/2017 05:20
1,2-Dibromoethane	U		12	40	µg/Kg-dry	1	10/24/2017 05:20
1,2-Dichlorobenzene	U		11	36	µg/Kg-dry	1	10/24/2017 05:20
1,2-Dichloroethane	U		9.8	33	µg/Kg-dry	1	10/24/2017 05:20
1,2-Dichloropropane	U		9.9	33	µg/Kg-dry	1	10/24/2017 05:20
1,3,5-Trimethylbenzene	U		16	52	µg/Kg-dry	1	10/24/2017 05:20
1,3-Dichlorobenzene	U		12	38	µg/Kg-dry	1	10/24/2017 05:20
1,4-Dichlorobenzene	U		9.4	31	µg/Kg-dry	1	10/24/2017 05:20
2-Butanone	U		48	160	µg/Kg-dry	1	10/24/2017 05:20
2-Hexanone	U		24	79	µg/Kg-dry	1	10/24/2017 05:20
4-Methyl-2-pentanone	U		26	87	µg/Kg-dry	1	10/24/2017 05:20
Benzene	U		8.1	27	µg/Kg-dry	1	10/24/2017 05:20
Bromochloromethane	U		16	53	µg/Kg-dry	1	10/24/2017 05:20
Bromodichloromethane	U		9.6	32	µg/Kg-dry	1	10/24/2017 05:20
Bromoform	U		13	42	µg/Kg-dry	1	10/24/2017 05:20
Bromomethane	U		16	52	µg/Kg-dry	1	10/24/2017 05:20
Carbon disulfide	U		12	40	µg/Kg-dry	1	10/24/2017 05:20
Carbon tetrachloride	U		6.4	21	µg/Kg-dry	1	10/24/2017 05:20
Chlorobenzene	U		11	36	µg/Kg-dry	1	10/24/2017 05:20
Chloroethane	U		23	76	µg/Kg-dry	1	10/24/2017 05:20
Chloroform	U		12	41	µg/Kg-dry	1	10/24/2017 05:20
Chloromethane	U		15	48	µg/Kg-dry	1	10/24/2017 05:20
cis-1,2-Dichloroethene	U		10	34	µg/Kg-dry	1	10/24/2017 05:20
cis-1,3-Dichloropropene	U		14	46	µg/Kg-dry	1	10/24/2017 05:20
Cyclohexane	U		18	60	µg/Kg-dry	1	10/24/2017 05:20
Dibromochloromethane	U		8.2	27	µg/Kg-dry	1	10/24/2017 05:20
Dichlorodifluoromethane	U		16	53	µg/Kg-dry	1	10/24/2017 05:20
Ethylbenzene	U		8.4	28	µg/Kg-dry	1	10/24/2017 05:20
Isopropylbenzene	U		14	47	µg/Kg-dry	1	10/24/2017 05:20
m,p-Xylene	U		16	54	µg/Kg-dry	1	10/24/2017 05:20

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-7 (8-9')
Collection Date: 10/12/2017 01:30 PM

Work Order: 17101025
Lab ID: 17101025-14
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methyl tert-butyl ether	U		12	39	µg/Kg-dry	1	10/24/2017 05:20
Methylcyclohexane	U		16	52	µg/Kg-dry	1	10/24/2017 05:20
Methylene chloride	U		16	55	µg/Kg-dry	1	10/24/2017 05:20
Naphthalene	U		6.1	20	µg/Kg-dry	1	10/24/2017 05:20
o-Xylene	U		12	39	µg/Kg-dry	1	10/24/2017 05:20
Styrene	U		25	84	µg/Kg-dry	1	10/24/2017 05:20
Tetrachloroethene	U		18	59	µg/Kg-dry	1	10/24/2017 05:20
Toluene	U		12	40	µg/Kg-dry	1	10/24/2017 05:20
trans-1,2-Dichloroethene	U		10	34	µg/Kg-dry	1	10/24/2017 05:20
trans-1,3-Dichloropropene	U		6.4	21	µg/Kg-dry	1	10/24/2017 05:20
Trichloroethene	U		9.6	32	µg/Kg-dry	1	10/24/2017 05:20
Trichlorofluoromethane	U		6.9	23	µg/Kg-dry	1	10/24/2017 05:20
Vinyl chloride	U		11	38	µg/Kg-dry	1	10/24/2017 05:20
Xylenes, Total	U		28	92	µg/Kg-dry	1	10/24/2017 05:20
Surr: 1,2-Dichloroethane-d4	105			70-130	%REC	1	10/24/2017 05:20
Surr: 4-Bromofluorobenzene	97.0			70-130	%REC	1	10/24/2017 05:20
Surr: Dibromofluoromethane	94.0			70-130	%REC	1	10/24/2017 05:20
Surr: Toluene-d8	93.4			70-130	%REC	1	10/24/2017 05:20
MOISTURE			Method: SW3550C				Analyst: MT
Moisture	8.9		0.025	0.050	% of sample	1	10/19/2017 12:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 14-Dec-17

Client: Ramboll Environ US Corporation
Work Order: 17101025
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: **109306** Instrument ID **VMS9** Method: **SW8260B**

MBLK		Sample ID: MBLK-109306-109306				Units: µg/Kg-dry		Analysis Date: 10/23/2017 11:17 PM		
Client ID:		Run ID: VMS9_171023B				SeqNo: 4720335		Prep Date: 10/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U	30								
1,1,2,2-Tetrachloroethane	U	30								
1,1,2-Trichloroethane	U	30								
1,1-Dichloroethane	U	30								
1,1-Dichloroethene	U	30								
1,2,3-Trichlorobenzene	U	30								
1,2,4-Trichlorobenzene	U	30								
1,2,4-Trimethylbenzene	U	30								
1,2-Dibromo-3-chloropropane	U	100								
1,2-Dibromoethane	U	30								
1,2-Dichlorobenzene	U	30								
1,2-Dichloroethane	U	30								
1,2-Dichloropropane	U	30								
1,3,5-Trimethylbenzene	U	30								
1,3-Dichlorobenzene	U	30								
1,4-Dichlorobenzene	U	30								
2-Butanone	U	200								
2-Hexanone	U	30								
4-Methyl-2-pentanone	U	30								
Benzene	U	30								
Bromochloromethane	U	30								
Bromodichloromethane	U	30								
Bromoform	U	30								
Bromomethane	U	100								
Carbon disulfide	U	30								
Carbon tetrachloride	U	30								
Chlorobenzene	U	30								
Chloroethane	U	100								
Chloroform	U	30								
Chloromethane	U	100								
cis-1,2-Dichloroethene	U	30								
cis-1,3-Dichloropropene	U	30								
Cyclohexane	U	30								
Dibromochloromethane	U	30								
Dichlorodifluoromethane	U	30								
Ethylbenzene	U	30								
Isopropylbenzene	U	30								
m,p-Xylene	U	60								
Methyl tert-butyl ether	U	30								
Methylcyclohexane	U	30								
Methylene chloride	U	30								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101025
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: 109306	Instrument ID VMS9	Method: SW8260B					
Naphthalene	U	100					
o-Xylene	U	30					
Styrene	U	30					
Tetrachloroethene	U	30					
Toluene	U	30					
trans-1,2-Dichloroethene	U	30					
trans-1,3-Dichloropropene	U	30					
Trichloroethene	U	30					
Trichlorofluoromethane	U	30					
Vinyl chloride	U	30					
Xylenes, Total	U	90					
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1028</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>103</i>	<i>70-130</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>917.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>91.8</i>	<i>70-130</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>1020</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>102</i>	<i>70-130</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>983</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>98.3</i>	<i>70-130</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101025
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: **109306** Instrument ID **VMS9** Method: **SW8260B**

LCS		Sample ID: LCS-109306-109306				Units: µg/Kg-dry		Analysis Date: 10/23/2017 10:29 PM		
Client ID:		Run ID: VMS9_171023B				SeqNo: 4720334		Prep Date: 10/19/2017		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1062	30	1000	0	106	70-135	0			
1,1,2,2-Tetrachloroethane	995.5	30	1000	0	99.6	55-130	0			
1,1,2-Trichloroethane	944.5	30	1000	0	94.4	60-125	0			
1,1-Dichloroethane	1004	30	1000	0	100	75-125	0			
1,1-Dichloroethene	1244	30	1000	0	124	65-135	0			
1,2,3-Trichlorobenzene	856	30	1000	0	85.6	60-135	0			
1,2,4-Trichlorobenzene	856	30	1000	0	85.6	65-130	0			
1,2,4-Trimethylbenzene	925.5	30	1000	0	92.6	65-135	0			
1,2-Dibromo-3-chloropropane	944.5	100	1000	0	94.4	40-135	0			
1,2-Dibromoethane	1234	30	1000	0	123	80-195	0			
1,2-Dichlorobenzene	880	30	1000	0	88	75-120	0			
1,2-Dichloroethane	891.5	30	1000	0	89.2	70-135	0			
1,2-Dichloropropane	954.5	30	1000	0	95.4	70-120	0			
1,3,5-Trimethylbenzene	948.5	30	1000	0	94.8	65-135	0			
1,3-Dichlorobenzene	889.5	30	1000	0	89	70-125	0			
1,4-Dichlorobenzene	876	30	1000	0	87.6	70-125	0			
2-Butanone	939.5	200	1000	0	94	30-160	0			
2-Hexanone	883.5	30	1000	0	88.4	45-145	0			
4-Methyl-2-pentanone	1094	30	1000	0	109	74-176	0			
Benzene	959	30	1000	0	95.9	75-125	0			
Bromochloromethane	966.5	30	1000	0	96.6	74-134	0			
Bromodichloromethane	942	30	1000	0	94.2	70-130	0			
Bromoform	849.5	30	1000	0	85	55-135	0			
Bromomethane	950.5	100	1000	0	95	50-170	0			
Carbon disulfide	1265	30	1000	0	126	45-160	0			
Carbon tetrachloride	958	30	1000	0	95.8	65-135	0			
Chlorobenzene	907	30	1000	0	90.7	75-125	0			
Chloroethane	860.5	100	1000	0	86	40-155	0			
Chloroform	981	30	1000	0	98.1	70-125	0			
Chloromethane	785.5	100	1000	0	78.6	50-144	0			
cis-1,2-Dichloroethene	1010	30	1000	0	101	65-125	0			
cis-1,3-Dichloropropene	897	30	1000	0	89.7	70-125	0			
Dibromochloromethane	776.5	30	1000	0	77.6	65-135	0			
Dichlorodifluoromethane	843.5	30	1000	0	84.4	35-135	0			
Ethylbenzene	912	30	1000	0	91.2	75-125	0			
Isopropylbenzene	947.5	30	1000	0	94.8	75-130	0			
m,p-Xylene	1878	60	2000	0	93.9	80-125	0			
Methyl tert-butyl ether	949	30	1000	0	94.9	75-125	0			
Methylene chloride	964.5	30	1000	0	96.4	55-145	0			
Naphthalene	853.5	100	1000	0	85.4	40-140	0			
o-Xylene	922	30	1000	0	92.2	75-125	0			
Styrene	982.5	30	1000	0	98.2	80-138	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101025
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: 109306	Instrument ID VMS9		Method: SW8260B				
Tetrachloroethene	1003	30	1000	0	100	67-167	0
Toluene	915.5	30	1000	0	91.6	70-125	0
trans-1,2-Dichloroethene	1111	30	1000	0	111	65-135	0
trans-1,3-Dichloropropene	773.5	30	1000	0	77.4	59-129	0
Trichloroethene	963	30	1000	0	96.3	75-125	0
Trichlorofluoromethane	1004	30	1000	0	100	25-185	0
Vinyl chloride	962	30	1000	0	96.2	60-125	0
Xylenes, Total	2800	90	3000	0	93.4	75-125	0
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1013</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>101</i>	<i>70-130</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>990.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>99</i>	<i>70-130</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>1073</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>107</i>	<i>70-130</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>996.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>99.6</i>	<i>70-130</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101025
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: **109306** Instrument ID **VMS9** Method: **SW8260B**

MS				Sample ID: 17101025-12A MS			Units: µg/Kg-dry		Analysis Date: 10/24/2017 06:57 A	
Client ID: LG-B-6 (10-11')				Run ID: VMS9_171023B			SeqNo: 4717642		Prep Date: 10/19/2017	
							DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	1511	41	1381	0	109	70-135	0			
1,1,2,2-Tetrachloroethane	1112	41	1381	0	80.5	55-130	0			
1,1,2-Trichloroethane	1393	41	1381	0	101	60-125	0			
1,1-Dichloroethane	1551	41	1381	0	112	75-125	0			
1,1-Dichloroethene	1924	41	1381	0	139	65-135	0			S
1,2,3-Trichlorobenzene	1150	41	1381	0	83.3	60-135	0			
1,2,4-Trichlorobenzene	1140	41	1381	0	82.6	65-130	0			
1,2,4-Trimethylbenzene	1411	41	1381	0	102	65-135	0			
1,2-Dibromo-3-chloropropane	1059	140	1381	0	76.7	40-135	0			
1,2-Dibromoethane	1748	41	1381	0	127	80-195	0			
1,2-Dichlorobenzene	1261	41	1381	0	91.3	75-120	0			
1,2-Dichloroethane	1357	41	1381	0	98.2	70-135	0			
1,2-Dichloropropane	1477	41	1381	0	107	70-120	0			
1,3,5-Trimethylbenzene	1437	41	1381	0	104	65-135	0			
1,3-Dichlorobenzene	1290	41	1381	0	93.4	70-125	0			
1,4-Dichlorobenzene	1266	41	1381	0	91.6	70-125	0			
2-Butanone	2334	280	1381	0	169	30-160	0			S
2-Hexanone	1929	41	1381	0	140	45-145	0			
4-Methyl-2-pentanone	1572	41	1381	0	114	74-176	0			
Benzene	1460	41	1381	0	106	75-125	0			
Bromochloromethane	1523	41	1381	0	110	74-134	0			
Bromodichloromethane	1308	41	1381	0	94.7	70-130	0			
Bromoform	1110	41	1381	0	80.4	55-135	0			
Bromomethane	1275	140	1381	0	92.3	50-170	0			
Carbon disulfide	1569	41	1381	0	114	45-160	0			
Carbon tetrachloride	1268	41	1381	0	91.8	65-135	0			
Chlorobenzene	1325	41	1381	0	96	75-125	0			
Chloroethane	245.8	140	1381	0	17.8	40-155	0			S
Chloroform	1522	41	1381	0	110	70-125	0			
Chloromethane	1274	140	1381	0	92.2	50-144	0			
cis-1,2-Dichloroethene	1485	41	1381	0	108	65-125	0			
cis-1,3-Dichloropropene	1123	41	1381	0	81.4	70-125	0			
Dibromochloromethane	1010	41	1381	0	73.2	65-135	0			
Dichlorodifluoromethane	1364	41	1381	0	98.8	35-135	0			
Ethylbenzene	1344	41	1381	0	97.3	75-125	0			
Isopropylbenzene	1419	41	1381	0	103	75-130	0			
m,p-Xylene	2714	83	2762	0	98.2	80-125	0			
Methyl tert-butyl ether	1565	41	1381	0	113	75-125	0			
Methylene chloride	1603	41	1381	0	116	55-145	0			
Naphthalene	1139	140	1381	0	82.5	40-140	0			
o-Xylene	1373	41	1381	0	99.4	75-125	0			
Styrene	1486	41	1381	0	108	80-138	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101025
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: 109306	Instrument ID VMS9		Method: SW8260B					
Tetrachloroethene	3372	41	1381	948	176	67-167	0	S
Toluene	1294	41	1381	0	93.7	70-125	0	
trans-1,2-Dichloroethene	1708	41	1381	0	124	65-135	0	
trans-1,3-Dichloropropene	914.2	41	1381	0	66.2	59-129	0	
Trichloroethene	1628	41	1381	0	118	75-125	0	
Trichlorofluoromethane	1486	41	1381	0	108	25-185	0	
Vinyl chloride	1520	41	1381	0	110	60-125	0	
Xylenes, Total	4087	120	4143	0	98.6	75-125	0	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1455</i>	<i>0</i>	<i>1381</i>	<i>0</i>	<i>105</i>	<i>70-130</i>	<i>0</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>1438</i>	<i>0</i>	<i>1381</i>	<i>0</i>	<i>104</i>	<i>70-130</i>	<i>0</i>	
<i>Surr: Dibromofluoromethane</i>	<i>1424</i>	<i>0</i>	<i>1381</i>	<i>0</i>	<i>103</i>	<i>70-130</i>	<i>0</i>	
<i>Surr: Toluene-d8</i>	<i>1322</i>	<i>0</i>	<i>1381</i>	<i>0</i>	<i>95.8</i>	<i>70-130</i>	<i>0</i>	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101025
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: **109306** Instrument ID **VMS9** Method: **SW8260B**

MSD				Sample ID: 17101025-12A MSD			Units: µg/Kg-dry		Analysis Date: 10/24/2017 07:22 A		
Client ID: LG-B-6 (10-11')			Run ID: VMS9_171023B			SeqNo: 4717643		Prep Date: 10/19/2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
1,1,1-Trichloroethane	1500	41	1381	0	109	70-135	1511	0.734	30		
1,1,2,2-Tetrachloroethane	1147	41	1381	0	83	55-130	1112	3.12	30		
1,1,2-Trichloroethane	1363	41	1381	0	98.7	60-125	1393	2.2	30		
1,1-Dichloroethane	1496	41	1381	0	108	75-125	1551	3.58	30		
1,1-Dichloroethene	1848	41	1381	0	134	65-135	1924	4.03	30		
1,2,3-Trichlorobenzene	1157	41	1381	0	83.8	60-135	1150	0.598	30		
1,2,4-Trichlorobenzene	1145	41	1381	0	82.9	65-130	1140	0.423	30		
1,2,4-Trimethylbenzene	1393	41	1381	0	101	65-135	1411	1.28	30		
1,2-Dibromo-3-chloropropane	1106	140	1381	0	80.1	40-135	1059	4.34	30		
1,2-Dibromoethane	1703	41	1381	0	123	80-195	1748	2.6	30		
1,2-Dichlorobenzene	1231	41	1381	0	89.2	75-120	1261	2.38	30		
1,2-Dichloroethane	1308	41	1381	0	94.7	70-135	1357	3.68	30		
1,2-Dichloropropane	1406	41	1381	0	102	70-120	1477	4.93	30		
1,3,5-Trimethylbenzene	1424	41	1381	0	103	65-135	1437	0.917	30		
1,3-Dichlorobenzene	1280	41	1381	0	92.7	70-125	1290	0.806	30		
1,4-Dichlorobenzene	1249	41	1381	0	90.4	70-125	1266	1.32	30		
2-Butanone	2241	280	1381	0	162	30-160	2334	4.11	30	S	
2-Hexanone	1888	41	1381	0	137	45-145	1929	2.17	30		
4-Methyl-2-pentanone	1588	41	1381	0	115	74-176	1572	1.01	30		
Benzene	1432	41	1381	0	104	75-125	1460	1.91	30		
Bromochloromethane	1430	41	1381	0	104	74-134	1523	6.31	30		
Bromodichloromethane	1282	41	1381	0	92.8	70-130	1308	1.97	30		
Bromoform	1116	41	1381	0	80.8	55-135	1110	0.558	30		
Bromomethane	1190	140	1381	0	86.2	50-170	1275	6.83	30		
Carbon disulfide	1587	41	1381	0	115	45-160	1569	1.14	30		
Carbon tetrachloride	1253	41	1381	0	90.8	65-135	1268	1.15	30		
Chlorobenzene	1302	41	1381	0	94.3	75-125	1325	1.73	30		
Chloroethane	173.3	140	1381	0	12.6	40-155	245.8	34.6	30	SR	
Chloroform	1447	41	1381	0	105	70-125	1522	5.02	30		
Chloromethane	1222	140	1381	0	88.5	50-144	1274	4.15	30		
cis-1,2-Dichloroethene	1413	41	1381	0	102	65-125	1485	5	30		
cis-1,3-Dichloropropene	1112	41	1381	0	80.6	70-125	1123	0.988	30		
Dibromochloromethane	1009	41	1381	0	73.1	65-135	1010	0.0684	30		
Dichlorodifluoromethane	1286	41	1381	0	93.2	35-135	1364	5.84	30		
Ethylbenzene	1307	41	1381	0	94.6	75-125	1344	2.76	30		
Isopropylbenzene	1390	41	1381	0	101	75-130	1419	2.06	30		
m,p-Xylene	2696	83	2762	0	97.6	80-125	2714	0.664	30		
Methyl tert-butyl ether	1507	41	1381	0	109	75-125	1565	3.82	30		
Methylene chloride	1516	41	1381	0	110	55-145	1603	5.58	30		
Naphthalene	1157	140	1381	0	83.8	40-140	1139	1.5	30		
o-Xylene	1329	41	1381	0	96.2	75-125	1373	3.27	30		
Styrene	1447	41	1381	0	105	80-138	1486	2.64	30		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101025
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: 109306	Instrument ID VMS9		Method: SW8260B							
Tetrachloroethene	3279	41	1381	948	169	67-167	3372	2.8	30	S
Toluene	1284	41	1381	0	93	70-125	1294	0.804	30	
trans-1,2-Dichloroethene	1644	41	1381	0	119	65-135	1708	3.79	30	
trans-1,3-Dichloropropene	949.4	41	1381	0	68.8	59-129	914.2	3.78	30	
Trichloroethene	1568	41	1381	0	114	75-125	1628	3.76	30	
Trichlorofluoromethane	1379	41	1381	0	99.8	25-185	1486	7.47	30	
Vinyl chloride	1456	41	1381	0	105	60-125	1520	4.32	30	
Xylenes, Total	4025	120	4143	0	97.2	75-125	4087	1.53	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1421</i>	<i>0</i>	<i>1381</i>	<i>0</i>	<i>103</i>	<i>70-130</i>	<i>1455</i>	<i>2.35</i>	<i>30</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>1424</i>	<i>0</i>	<i>1381</i>	<i>0</i>	<i>103</i>	<i>70-130</i>	<i>1438</i>	<i>0.965</i>	<i>30</i>	
<i>Surr: Dibromofluoromethane</i>	<i>1409</i>	<i>0</i>	<i>1381</i>	<i>0</i>	<i>102</i>	<i>70-130</i>	<i>1424</i>	<i>1.02</i>	<i>30</i>	
<i>Surr: Toluene-d8</i>	<i>1279</i>	<i>0</i>	<i>1381</i>	<i>0</i>	<i>92.6</i>	<i>70-130</i>	<i>1322</i>	<i>3.29</i>	<i>30</i>	

The following samples were analyzed in this batch:

17101025-01A	17101025-02A	17101025-03A
17101025-04A	17101025-05A	17101025-06A
17101025-07A	17101025-08A	17101025-09A
17101025-10A	17101025-11A	17101025-12A
17101025-13A	17101025-14A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101025
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: **R222672** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R222672				Units: % of sample		Analysis Date: 10/19/2017 11:22 A		
Client ID:		Run ID: MOIST_171019A				SeqNo: 4711393		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.050

LCS		Sample ID: LCS-R222672				Units: % of sample		Analysis Date: 10/19/2017 11:22 A		
Client ID:		Run ID: MOIST_171019A				SeqNo: 4711392		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 17101016-17A DUP				Units: % of sample		Analysis Date: 10/19/2017 11:22 A		
Client ID:		Run ID: MOIST_171019A				SeqNo: 4711375		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 23.53 0.050 0 0 0 0-0 22.84 2.98 5

DUP		Sample ID: 17101025-03B DUP				Units: % of sample		Analysis Date: 10/19/2017 11:22 A		
Client ID: LG-B-2 (2.5-3.5')		Run ID: MOIST_171019A				SeqNo: 4711385		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 19.41 0.050 0 0 0 0-0 19.26 0.776 5

The following samples were analyzed in this batch:

17101025-01B	17101025-02B	17101025-03B
17101025-04B	17101025-05B	17101025-06B
17101025-07B	17101025-08B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101025
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: **R222673** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R222673				Units: % of sample		Analysis Date: 10/19/2017 12:23 PM		
Client ID:		Run ID: MOIST_171019B				SeqNo: 4711437		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.050

LCS		Sample ID: LCS-R222673				Units: % of sample		Analysis Date: 10/19/2017 12:23 PM		
Client ID:		Run ID: MOIST_171019B				SeqNo: 4711436		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP		Sample ID: 17101025-12B DUP				Units: % of sample		Analysis Date: 10/19/2017 12:23 PM		
Client ID: LG-B-6 (10-11')		Run ID: MOIST_171019B				SeqNo: 4711417		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 15.06 0.050 0 0 0 0-0 15.56 3.27 5

DUP		Sample ID: 17101184-02B DUP				Units: % of sample		Analysis Date: 10/19/2017 12:23 PM		
Client ID:		Run ID: MOIST_171019B				SeqNo: 4711433		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 20.96 0.050 0 0 0 0-0 20.44 2.51 5

The following samples were analyzed in this batch:

17101025-09B	17101025-10B	17101025-11B
17101025-12B	17101025-13B	17101025-14B

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



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Chain of Custody Form

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COC ID:

38978

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Salt Lake City, UT
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York, PA
+1 304 356 3168

York, PA
+1 717 505 5280

Customer Information		Project Information		ALS Project Manager: _____ ALS Work Order #: <u>17101025</u>														
Parameter/Method Request for Analysis																		
Purchase Order		Project Name	Site ID: <u>1257/1258</u>	A	VOCs													
Work Order		Project Number	<u>21-41365B</u>	B														
Company Name	Ramboll Environ US Corporation	Bill To Company	Ramboll Environ US Corporation	C														
Send Report To	<u>Donna Volk</u>	Invoice Attn	Accounts Payable	D														
Address	175 N Corporate Drive	Address	175 N Corporate Drive	E														
	Suite 180		Suite 180	F														
City/State/Zip	Brookfield, WI 53045	City/State/Zip	Brookfield, WI 53045	G														
Phone	(262) 901-0099	Phone	(262) 901-0099	H														
Fax	(262) 901-0079	Fax	(262) 901-0079	I														
e-Mail Address	<u>dvolk@ramboll.com</u>	e-Mail Address	<u>dvolk@ramboll.com</u>	J														
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold	
1	LG-B-1 (4-5')	10/12/17	0825	S	MeOH	3	X											
2	LG-B-1 (13.5-14')		0835				X											
3	LG-B-2 (2.5-3.5')		0900				X											
4	LG-B-2 (9-10')		0910				X											
5	LG-B-3 (4-5')		0940				X											
6	LG-B-3 (9-10')		0950				X											
7	LG-B-4 (2-3')		1020				X											
8	LG-B-4 (7.5-8.5')		1030				X											
9	LG-B-5 (4-5')		1110				X											
10	LG-B-5 (9-10')	✓	1120	✓	✓	✓	X											
Sampler(s) Please Print & Sign		Shipment Method		Turnaround Time in Business Days (BD)										Results Due Date:				
<u>Jonathan Fuqua</u>		<u>FedEx ON</u>		<input checked="" type="checkbox"/> 10 BD <input type="checkbox"/> 5 BD <input type="checkbox"/> 3 BD <input type="checkbox"/> 2 BD <input type="checkbox"/> 1 BD														
Relinquished by:	Date:	Time:	Received by:	Notes:														
<u>Jonathan Fuqua</u>	<u>10/12/17</u>	<u>1400</u>	<u>Mike Fred</u>															
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp	QC Package: (Check One Box Below)												
<u>NTF</u>	<u>10-16-17</u>	<u>0930</u>	<u>NTF</u>	<u>SP2</u>	<u>3.0</u>	<input checked="" type="checkbox"/> Level II Std QC <input type="checkbox"/> TRAP Checklist <input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> TRAP Level IV <input type="checkbox"/> Level IV SW846/CLP <input type="checkbox"/> Other												
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):															
<u>NTF</u>	<u>10-16-17</u>	<u>1115</u>	<u>NTF</u>															
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₈ 6-NaHSO ₄ 7-Other 8-4°C 9-5035																		

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

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Chain of Custody Form

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COC ID: 38977

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Spring City, PA
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Salt Lake City, UT
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South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

Customer Information			Project Information			Parameter/Method Request for Analysis												
Purchase Order		Project Name	Site ID: 12.57/12.58			VOCs												
Work Order		Project Number	21-41365-B															
Company Name	Ramboll Environ US Corporation	Bill To Company	Ramboll Environ US Corporation															
Send Report To	Donna Volk	Invoice Attn	Accounts Payable															
Address	175 N Corporate Drive	Address	175 N Corporate Drive															
	Suite 180		Suite 180															
City/State/Zip	Brookfield, WI 53045	City/State/Zip	Brookfield, WI 53045															
Phone	(262) 901-0099	Phone	(262) 901-0099															
Fax	(262) 901-0079	Fax	(262) 901-0079															
e-Mail Address	dvolk@ramboll.com	e-Mail Address	dvolk@ramboll.com															

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
11	LG-B-6 (4-5')	10/12/17	1215	S	MeOH	3	X										
12	LG-B-6 (10-11')		1250				X										
13	LG-B-7 (4-5')		1325				X										
14	LG-B-7 (8-9')		1330				X										
5	Temp Blank					1											
6	Methanol Trip Blank				MeOH	1	X										
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign		Shipment Method		Turnaround Time in Business Days (BD)				Results Due Date:	
Jonathan Fuqua		FedEx ON		<input checked="" type="checkbox"/> 10 BD <input type="checkbox"/> 5 BD <input type="checkbox"/> 3 BD <input type="checkbox"/> 2 BD <input type="checkbox"/> 1 BD					
Relinquished by:	Date:	Time:	Received by:	Notes:					
	10/13/17	1400							
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp	QC Package: (Check One Box Below)			
	10-14-17	0930				<input checked="" type="checkbox"/> Level II Std QC <input type="checkbox"/> TRRP Checklist <input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> Level IV SW846/CLP <input type="checkbox"/> Other			
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):						
	10-16-17	1115							
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₅ 6-NaHSO ₄ 7-Other 8-4°C 9-5035									

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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 3. The Chain of Custody is a legal document. All information must be completed accurately.

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Sample Receipt Checklist

Client Name: **ENVIRONINT - WI**

Date/Time Received: **14-Oct-17 09:30**

Work Order: **17101025**

Received by: **NCF**

Checklist completed by Nicole Fredericks
eSignature

16-Oct-17
Date

Reviewed by: Chad Whelton
eSignature

16-Oct-17
Date

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition? Yes ☒ No ☐ Not Present ☐

Custody seals intact on shipping container/cooler? Yes ☒ No ☐ Not Present ☐

Custody seals intact on sample bottles? Yes ☐ No ☒ Not Present ☐

Chain of custody present? Yes ☒ No ☐

Chain of custody signed when relinquished and received? Yes ☒ No ☐

Chain of custody agrees with sample labels? Yes ☒ No ☐

Samples in proper container/bottle? Yes ☒ No ☐

Sample containers intact? Yes ☒ No ☐

Sufficient sample volume for indicated test? Yes ☒ No ☐

All samples received within holding time? Yes ☒ No ☐

Container/Temp Blank temperature in compliance? Yes ☒ No ☐

Sample(s) received on ice? Yes ☒ No ☐

Temperature(s)/Thermometer(s): 3.0/3.0 SR2

Cooler(s)/Kit(s):

Date/Time sample(s) sent to storage: 10/16/2017 11:33:56 AM

Water - VOA vials have zero headspace? Yes ☒ No ☐ No VOA vials submitted ☐

Water - pH acceptable upon receipt? Yes ☒ No ☐ N/A ☐

pH adjusted? Yes ☐ No ☒ N/A ☐

pH adjusted by: -

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



15-Dec-2017

Donna Volk
Ramboll Environ US Corporation
175 N Corporate Drive
Suite 160
Brookfield, WI 53045

Re: **Site ID: 12.57/12.58 (21-41365B)**

Work Order: **17101814**

Dear Donna,

ALS Environmental received 8 samples on 27-Oct-2017 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 31.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ADDRESS 3352 128th Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Work Order: 17101814

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
17101814-01	LG-B-1	Groundwater		10/25/2017 11:20	10/27/2017 09:30	<input type="checkbox"/>
17101814-02	LG-B-2	Groundwater		10/25/2017 12:05	10/27/2017 09:30	<input type="checkbox"/>
17101814-03	LG-B-3	Groundwater		10/25/2017 12:35	10/27/2017 09:30	<input type="checkbox"/>
17101814-04	LG-B-4	Groundwater		10/25/2017 12:59	10/27/2017 09:30	<input type="checkbox"/>
17101814-05	LG-B-5	Groundwater		10/25/2017 13:40	10/27/2017 09:30	<input type="checkbox"/>
17101814-06	LG-B-6	Groundwater		10/25/2017 14:15	10/27/2017 09:30	<input type="checkbox"/>
17101814-07	LG-B-7	Groundwater		10/25/2017 14:47	10/27/2017 09:30	<input type="checkbox"/>
17101814-08	Trip Blank	Water		10/25/2017	10/27/2017 09:30	<input type="checkbox"/>

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Work Order: 17101814

Case Narrative

Samples for the above noted Work Order were received on 10/27/2017. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, sample condition, preservation, and temperature compliance.

In order to ensure compliance with NR 149 criteria, please note the following report format:

- (1) The Limit of Detection (LOD) is reported as the MDL (Method Detection Limit)
- (2) The Limit of Quantitation (LOQ) is reported as the PQL (Practical Quantitation Limit)
- (3) All reported concentrations, including those for the LOD and LOQ, are adjusted for any required dilutions
- (4) All reported concentrations, including those for the LOD and LOQ, are adjusted for moisture content when samples are reported on a dry weight basis.

Samples were analyzed according to the analytical methodology previously documented in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Detail as to the associated samples can be found at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, acronyms, and units utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Volatile Organics

Batch R223840b, Method WI_VOC_8260_W, Sample 17101814-08A: This trip blank had a positive result for Chloroform above the method detection limit. This should be considered as probable laboratory contamination due to the chlorinated water source used by the laboratory to prepare the trip blanks.

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
WorkOrder: 17101814

QUALIFIERS, ACRONYMS, UNITS

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
µg/L	Micrograms per Liter

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-1
Collection Date: 10/25/2017 11:20 AM

Work Order: 17101814
Lab ID: 17101814-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B			Analyst: BG	
1,1,1-Trichloroethane	U		0.36	1.2	µg/L	1	11/6/2017 02:10
1,1,2,2-Tetrachloroethane	U		0.19	0.62	µg/L	1	11/6/2017 02:10
1,1,2-Trichloroethane	U		0.40	1.3	µg/L	1	11/6/2017 02:10
1,1-Dichloroethane	U		0.31	1.0	µg/L	1	11/6/2017 02:10
1,1-Dichloroethene	U		0.28	0.92	µg/L	1	11/6/2017 02:10
1,2,3-Trichlorobenzene	U		0.17	0.55	µg/L	1	11/6/2017 02:10
1,2,4-Trichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 02:10
1,2-Dibromo-3-chloropropane	U		0.97	3.2	µg/L	1	11/6/2017 02:10
1,2-Dibromoethane	U		0.98	3.3	µg/L	1	11/6/2017 02:10
1,2-Dichlorobenzene	U		0.22	0.73	µg/L	1	11/6/2017 02:10
1,2-Dichloroethane	U		0.17	0.55	µg/L	1	11/6/2017 02:10
1,2-Dichloropropane	U		0.25	0.83	µg/L	1	11/6/2017 02:10
1,3-Dichlorobenzene	U		0.29	0.96	µg/L	1	11/6/2017 02:10
1,4-Dichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 02:10
2-Butanone	U		0.58	2.0	µg/L	1	11/6/2017 02:10
2-Hexanone	U		0.13	0.42	µg/L	1	11/6/2017 02:10
4-Methyl-2-pentanone	U		0.11	0.40	µg/L	1	11/6/2017 02:10
Benzene	U		0.30	1.0	µg/L	1	11/6/2017 02:10
Bromochloromethane	U		0.20	0.66	µg/L	1	11/6/2017 02:10
Bromodichloromethane	U		0.23	0.78	µg/L	1	11/6/2017 02:10
Bromoform	U		0.77	2.6	µg/L	1	11/6/2017 02:10
Bromomethane	U		0.38	1.3	µg/L	1	11/6/2017 02:10
Carbon disulfide	U		0.23	0.76	µg/L	1	11/6/2017 02:10
Carbon tetrachloride	U		0.31	1.0	µg/L	1	11/6/2017 02:10
Chlorobenzene	U		0.27	0.90	µg/L	1	11/6/2017 02:10
Chloroethane	U		0.29	0.97	µg/L	1	11/6/2017 02:10
Chloroform	U		0.26	0.86	µg/L	1	11/6/2017 02:10
Chloromethane	U		0.17	0.57	µg/L	1	11/6/2017 02:10
cis-1,2-Dichloroethene	U		0.25	0.85	µg/L	1	11/6/2017 02:10
cis-1,3-Dichloropropene	U		0.39	1.3	µg/L	1	11/6/2017 02:10
Cyclohexane	U		0.22	0.73	µg/L	1	11/6/2017 02:10
Dibromochloromethane	U		0.38	1.2	µg/L	1	11/6/2017 02:10
Dichlorodifluoromethane	U		0.13	0.44	µg/L	1	11/6/2017 02:10
Ethylbenzene	U		0.40	1.3	µg/L	1	11/6/2017 02:10
Isopropylbenzene	U		0.31	1.0	µg/L	1	11/6/2017 02:10
m,p-Xylene	U		0.98	3.3	µg/L	1	11/6/2017 02:10
Methyl tert-butyl ether	U		0.12	0.40	µg/L	1	11/6/2017 02:10
Methylcyclohexane	U		0.27	0.90	µg/L	1	11/6/2017 02:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-1
Collection Date: 10/25/2017 11:20 AM

Work Order: 17101814
Lab ID: 17101814-01
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylene chloride	U		0.56	1.8	µg/L	1	11/6/2017 02:10
o-Xylene	U		0.35	1.2	µg/L	1	11/6/2017 02:10
Styrene	U		0.24	0.79	µg/L	1	11/6/2017 02:10
Tetrachloroethene	1.9		0.27	0.91	µg/L	1	11/6/2017 02:10
Toluene	U		0.37	1.2	µg/L	1	11/6/2017 02:10
trans-1,2-Dichloroethene	U		0.28	0.93	µg/L	1	11/6/2017 02:10
trans-1,3-Dichloropropene	U		0.82	2.7	µg/L	1	11/6/2017 02:10
Trichloroethene	4.9		0.30	0.99	µg/L	1	11/6/2017 02:10
Trichlorofluoromethane	U		0.20	0.66	µg/L	1	11/6/2017 02:10
Vinyl chloride	U		0.20	0.68	µg/L	1	11/6/2017 02:10
Xylenes, Total	U		1.3	4.4	µg/L	1	11/6/2017 02:10
Surr: 1,2-Dichloroethane-d4	103			75-120	%REC	1	11/6/2017 02:10
Surr: 4-Bromofluorobenzene	99.0			80-110	%REC	1	11/6/2017 02:10
Surr: Dibromofluoromethane	98.8			85-115	%REC	1	11/6/2017 02:10
Surr: Toluene-d8	98.8			85-110	%REC	1	11/6/2017 02:10

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-2
Collection Date: 10/25/2017 12:05 PM

Work Order: 17101814
Lab ID: 17101814-02
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B			Analyst: BG	
1,1,1-Trichloroethane	U		0.36	1.2	µg/L	1	11/6/2017 02:36
1,1,2,2-Tetrachloroethane	U		0.19	0.62	µg/L	1	11/6/2017 02:36
1,1,2-Trichloroethane	U		0.40	1.3	µg/L	1	11/6/2017 02:36
1,1-Dichloroethane	U		0.31	1.0	µg/L	1	11/6/2017 02:36
1,1-Dichloroethene	U		0.28	0.92	µg/L	1	11/6/2017 02:36
1,2,3-Trichlorobenzene	U		0.17	0.55	µg/L	1	11/6/2017 02:36
1,2,4-Trichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 02:36
1,2-Dibromo-3-chloropropane	U		0.97	3.2	µg/L	1	11/6/2017 02:36
1,2-Dibromoethane	U		0.98	3.3	µg/L	1	11/6/2017 02:36
1,2-Dichlorobenzene	U		0.22	0.73	µg/L	1	11/6/2017 02:36
1,2-Dichloroethane	U		0.17	0.55	µg/L	1	11/6/2017 02:36
1,2-Dichloropropane	U		0.25	0.83	µg/L	1	11/6/2017 02:36
1,3-Dichlorobenzene	U		0.29	0.96	µg/L	1	11/6/2017 02:36
1,4-Dichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 02:36
2-Butanone	U		0.58	2.0	µg/L	1	11/6/2017 02:36
2-Hexanone	U		0.13	0.42	µg/L	1	11/6/2017 02:36
4-Methyl-2-pentanone	U		0.11	0.40	µg/L	1	11/6/2017 02:36
Benzene	U		0.30	1.0	µg/L	1	11/6/2017 02:36
Bromochloromethane	U		0.20	0.66	µg/L	1	11/6/2017 02:36
Bromodichloromethane	U		0.23	0.78	µg/L	1	11/6/2017 02:36
Bromoform	U		0.77	2.6	µg/L	1	11/6/2017 02:36
Bromomethane	U		0.38	1.3	µg/L	1	11/6/2017 02:36
Carbon disulfide	U		0.23	0.76	µg/L	1	11/6/2017 02:36
Carbon tetrachloride	U		0.31	1.0	µg/L	1	11/6/2017 02:36
Chlorobenzene	U		0.27	0.90	µg/L	1	11/6/2017 02:36
Chloroethane	U		0.29	0.97	µg/L	1	11/6/2017 02:36
Chloroform	U		0.26	0.86	µg/L	1	11/6/2017 02:36
Chloromethane	U		0.17	0.57	µg/L	1	11/6/2017 02:36
cis-1,2-Dichloroethene	U		0.25	0.85	µg/L	1	11/6/2017 02:36
cis-1,3-Dichloropropene	U		0.39	1.3	µg/L	1	11/6/2017 02:36
Cyclohexane	U		0.22	0.73	µg/L	1	11/6/2017 02:36
Dibromochloromethane	U		0.38	1.2	µg/L	1	11/6/2017 02:36
Dichlorodifluoromethane	U		0.13	0.44	µg/L	1	11/6/2017 02:36
Ethylbenzene	U		0.40	1.3	µg/L	1	11/6/2017 02:36
Isopropylbenzene	U		0.31	1.0	µg/L	1	11/6/2017 02:36
m,p-Xylene	U		0.98	3.3	µg/L	1	11/6/2017 02:36
Methyl tert-butyl ether	U		0.12	0.40	µg/L	1	11/6/2017 02:36
Methylcyclohexane	U		0.27	0.90	µg/L	1	11/6/2017 02:36

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-2
Collection Date: 10/25/2017 12:05 PM

Work Order: 17101814
Lab ID: 17101814-02
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylene chloride	U		0.56	1.8	µg/L	1	11/6/2017 02:36
o-Xylene	U		0.35	1.2	µg/L	1	11/6/2017 02:36
Styrene	U		0.24	0.79	µg/L	1	11/6/2017 02:36
Tetrachloroethene	1.0		0.27	0.91	µg/L	1	11/6/2017 02:36
Toluene	U		0.37	1.2	µg/L	1	11/6/2017 02:36
trans-1,2-Dichloroethene	U		0.28	0.93	µg/L	1	11/6/2017 02:36
trans-1,3-Dichloropropene	U		0.82	2.7	µg/L	1	11/6/2017 02:36
Trichloroethene	2.1		0.30	0.99	µg/L	1	11/6/2017 02:36
Trichlorofluoromethane	U		0.20	0.66	µg/L	1	11/6/2017 02:36
Vinyl chloride	U		0.20	0.68	µg/L	1	11/6/2017 02:36
Xylenes, Total	U		1.3	4.4	µg/L	1	11/6/2017 02:36
Surr: 1,2-Dichloroethane-d4	105			75-120	%REC	1	11/6/2017 02:36
Surr: 4-Bromofluorobenzene	99.0			80-110	%REC	1	11/6/2017 02:36
Surr: Dibromofluoromethane	99.2			85-115	%REC	1	11/6/2017 02:36
Surr: Toluene-d8	99.8			85-110	%REC	1	11/6/2017 02:36

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-3
Collection Date: 10/25/2017 12:35 PM

Work Order: 17101814
Lab ID: 17101814-03
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B			Analyst: BG	
1,1,1-Trichloroethane	U		0.36	1.2	µg/L	1	11/6/2017 03:01
1,1,2,2-Tetrachloroethane	U		0.19	0.62	µg/L	1	11/6/2017 03:01
1,1,2-Trichloroethane	U		0.40	1.3	µg/L	1	11/6/2017 03:01
1,1-Dichloroethane	U		0.31	1.0	µg/L	1	11/6/2017 03:01
1,1-Dichloroethene	U		0.28	0.92	µg/L	1	11/6/2017 03:01
1,2,3-Trichlorobenzene	U		0.17	0.55	µg/L	1	11/6/2017 03:01
1,2,4-Trichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 03:01
1,2-Dibromo-3-chloropropane	U		0.97	3.2	µg/L	1	11/6/2017 03:01
1,2-Dibromoethane	U		0.98	3.3	µg/L	1	11/6/2017 03:01
1,2-Dichlorobenzene	U		0.22	0.73	µg/L	1	11/6/2017 03:01
1,2-Dichloroethane	U		0.17	0.55	µg/L	1	11/6/2017 03:01
1,2-Dichloropropane	U		0.25	0.83	µg/L	1	11/6/2017 03:01
1,3-Dichlorobenzene	U		0.29	0.96	µg/L	1	11/6/2017 03:01
1,4-Dichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 03:01
2-Butanone	U		0.58	2.0	µg/L	1	11/6/2017 03:01
2-Hexanone	U		0.13	0.42	µg/L	1	11/6/2017 03:01
4-Methyl-2-pentanone	U		0.11	0.40	µg/L	1	11/6/2017 03:01
Benzene	U		0.30	1.0	µg/L	1	11/6/2017 03:01
Bromochloromethane	U		0.20	0.66	µg/L	1	11/6/2017 03:01
Bromodichloromethane	U		0.23	0.78	µg/L	1	11/6/2017 03:01
Bromoform	U		0.77	2.6	µg/L	1	11/6/2017 03:01
Bromomethane	U		0.38	1.3	µg/L	1	11/6/2017 03:01
Carbon disulfide	U		0.23	0.76	µg/L	1	11/6/2017 03:01
Carbon tetrachloride	U		0.31	1.0	µg/L	1	11/6/2017 03:01
Chlorobenzene	U		0.27	0.90	µg/L	1	11/6/2017 03:01
Chloroethane	U		0.29	0.97	µg/L	1	11/6/2017 03:01
Chloroform	U		0.26	0.86	µg/L	1	11/6/2017 03:01
Chloromethane	U		0.17	0.57	µg/L	1	11/6/2017 03:01
cis-1,2-Dichloroethene	U		0.25	0.85	µg/L	1	11/6/2017 03:01
cis-1,3-Dichloropropene	U		0.39	1.3	µg/L	1	11/6/2017 03:01
Cyclohexane	U		0.22	0.73	µg/L	1	11/6/2017 03:01
Dibromochloromethane	U		0.38	1.2	µg/L	1	11/6/2017 03:01
Dichlorodifluoromethane	U		0.13	0.44	µg/L	1	11/6/2017 03:01
Ethylbenzene	U		0.40	1.3	µg/L	1	11/6/2017 03:01
Isopropylbenzene	U		0.31	1.0	µg/L	1	11/6/2017 03:01
m,p-Xylene	U		0.98	3.3	µg/L	1	11/6/2017 03:01
Methyl tert-butyl ether	U		0.12	0.40	µg/L	1	11/6/2017 03:01
Methylcyclohexane	U		0.27	0.90	µg/L	1	11/6/2017 03:01

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-3
Collection Date: 10/25/2017 12:35 PM

Work Order: 17101814
Lab ID: 17101814-03
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylene chloride	U		0.56	1.8	µg/L	1	11/6/2017 03:01
o-Xylene	U		0.35	1.2	µg/L	1	11/6/2017 03:01
Styrene	U		0.24	0.79	µg/L	1	11/6/2017 03:01
Tetrachloroethene	U		0.27	0.91	µg/L	1	11/6/2017 03:01
Toluene	U		0.37	1.2	µg/L	1	11/6/2017 03:01
trans-1,2-Dichloroethene	U		0.28	0.93	µg/L	1	11/6/2017 03:01
trans-1,3-Dichloropropene	U		0.82	2.7	µg/L	1	11/6/2017 03:01
Trichloroethene	U		0.30	0.99	µg/L	1	11/6/2017 03:01
Trichlorofluoromethane	U		0.20	0.66	µg/L	1	11/6/2017 03:01
Vinyl chloride	U		0.20	0.68	µg/L	1	11/6/2017 03:01
Xylenes, Total	U		1.3	4.4	µg/L	1	11/6/2017 03:01
Surr: 1,2-Dichloroethane-d4	105			75-120	%REC	1	11/6/2017 03:01
Surr: 4-Bromofluorobenzene	99.0			80-110	%REC	1	11/6/2017 03:01
Surr: Dibromofluoromethane	97.5			85-115	%REC	1	11/6/2017 03:01
Surr: Toluene-d8	99.5			85-110	%REC	1	11/6/2017 03:01

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-4
Collection Date: 10/25/2017 12:59 PM

Work Order: 17101814
Lab ID: 17101814-04
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B			Analyst: BG	
1,1,1-Trichloroethane	U		0.36	1.2	µg/L	1	11/6/2017 03:27
1,1,2,2-Tetrachloroethane	U		0.19	0.62	µg/L	1	11/6/2017 03:27
1,1,2-Trichloroethane	U		0.40	1.3	µg/L	1	11/6/2017 03:27
1,1-Dichloroethane	U		0.31	1.0	µg/L	1	11/6/2017 03:27
1,1-Dichloroethene	U		0.28	0.92	µg/L	1	11/6/2017 03:27
1,2,3-Trichlorobenzene	U		0.17	0.55	µg/L	1	11/6/2017 03:27
1,2,4-Trichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 03:27
1,2-Dibromo-3-chloropropane	U		0.97	3.2	µg/L	1	11/6/2017 03:27
1,2-Dibromoethane	U		0.98	3.3	µg/L	1	11/6/2017 03:27
1,2-Dichlorobenzene	U		0.22	0.73	µg/L	1	11/6/2017 03:27
1,2-Dichloroethane	U		0.17	0.55	µg/L	1	11/6/2017 03:27
1,2-Dichloropropane	U		0.25	0.83	µg/L	1	11/6/2017 03:27
1,3-Dichlorobenzene	U		0.29	0.96	µg/L	1	11/6/2017 03:27
1,4-Dichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 03:27
2-Butanone	U		0.58	2.0	µg/L	1	11/6/2017 03:27
2-Hexanone	U		0.13	0.42	µg/L	1	11/6/2017 03:27
4-Methyl-2-pentanone	U		0.11	0.40	µg/L	1	11/6/2017 03:27
Benzene	U		0.30	1.0	µg/L	1	11/6/2017 03:27
Bromochloromethane	U		0.20	0.66	µg/L	1	11/6/2017 03:27
Bromodichloromethane	U		0.23	0.78	µg/L	1	11/6/2017 03:27
Bromoform	U		0.77	2.6	µg/L	1	11/6/2017 03:27
Bromomethane	U		0.38	1.3	µg/L	1	11/6/2017 03:27
Carbon disulfide	U		0.23	0.76	µg/L	1	11/6/2017 03:27
Carbon tetrachloride	U		0.31	1.0	µg/L	1	11/6/2017 03:27
Chlorobenzene	U		0.27	0.90	µg/L	1	11/6/2017 03:27
Chloroethane	U		0.29	0.97	µg/L	1	11/6/2017 03:27
Chloroform	0.52	J	0.26	0.86	µg/L	1	11/6/2017 03:27
Chloromethane	U		0.17	0.57	µg/L	1	11/6/2017 03:27
cis-1,2-Dichloroethene	U		0.25	0.85	µg/L	1	11/6/2017 03:27
cis-1,3-Dichloropropene	U		0.39	1.3	µg/L	1	11/6/2017 03:27
Cyclohexane	U		0.22	0.73	µg/L	1	11/6/2017 03:27
Dibromochloromethane	U		0.38	1.2	µg/L	1	11/6/2017 03:27
Dichlorodifluoromethane	U		0.13	0.44	µg/L	1	11/6/2017 03:27
Ethylbenzene	U		0.40	1.3	µg/L	1	11/6/2017 03:27
Isopropylbenzene	U		0.31	1.0	µg/L	1	11/6/2017 03:27
m,p-Xylene	U		0.98	3.3	µg/L	1	11/6/2017 03:27
Methyl tert-butyl ether	U		0.12	0.40	µg/L	1	11/6/2017 03:27
Methylcyclohexane	U		0.27	0.90	µg/L	1	11/6/2017 03:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-4
Collection Date: 10/25/2017 12:59 PM

Work Order: 17101814
Lab ID: 17101814-04
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylene chloride	U		0.56	1.8	µg/L	1	11/6/2017 03:27
o-Xylene	U		0.35	1.2	µg/L	1	11/6/2017 03:27
Styrene	U		0.24	0.79	µg/L	1	11/6/2017 03:27
Tetrachloroethene	13		0.27	0.91	µg/L	1	11/6/2017 03:27
Toluene	U		0.37	1.2	µg/L	1	11/6/2017 03:27
trans-1,2-Dichloroethene	U		0.28	0.93	µg/L	1	11/6/2017 03:27
trans-1,3-Dichloropropene	U		0.82	2.7	µg/L	1	11/6/2017 03:27
Trichloroethene	8.7		0.30	0.99	µg/L	1	11/6/2017 03:27
Trichlorofluoromethane	U		0.20	0.66	µg/L	1	11/6/2017 03:27
Vinyl chloride	U		0.20	0.68	µg/L	1	11/6/2017 03:27
Xylenes, Total	U		1.3	4.4	µg/L	1	11/6/2017 03:27
Surr: 1,2-Dichloroethane-d4	104			75-120	%REC	1	11/6/2017 03:27
Surr: 4-Bromofluorobenzene	99.6			80-110	%REC	1	11/6/2017 03:27
Surr: Dibromofluoromethane	96.8			85-115	%REC	1	11/6/2017 03:27
Surr: Toluene-d8	99.9			85-110	%REC	1	11/6/2017 03:27

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-5
Collection Date: 10/25/2017 01:40 PM

Work Order: 17101814
Lab ID: 17101814-05
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B			Analyst: BG	
1,1,1-Trichloroethane	U		0.36	1.2	µg/L	1	11/6/2017 03:53
1,1,2,2-Tetrachloroethane	U		0.19	0.62	µg/L	1	11/6/2017 03:53
1,1,2-Trichloroethane	U		0.40	1.3	µg/L	1	11/6/2017 03:53
1,1-Dichloroethane	U		0.31	1.0	µg/L	1	11/6/2017 03:53
1,1-Dichloroethene	U		0.28	0.92	µg/L	1	11/6/2017 03:53
1,2,3-Trichlorobenzene	U		0.17	0.55	µg/L	1	11/6/2017 03:53
1,2,4-Trichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 03:53
1,2-Dibromo-3-chloropropane	U		0.97	3.2	µg/L	1	11/6/2017 03:53
1,2-Dibromoethane	U		0.98	3.3	µg/L	1	11/6/2017 03:53
1,2-Dichlorobenzene	U		0.22	0.73	µg/L	1	11/6/2017 03:53
1,2-Dichloroethane	U		0.17	0.55	µg/L	1	11/6/2017 03:53
1,2-Dichloropropane	U		0.25	0.83	µg/L	1	11/6/2017 03:53
1,3-Dichlorobenzene	U		0.29	0.96	µg/L	1	11/6/2017 03:53
1,4-Dichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 03:53
2-Butanone	U		0.58	2.0	µg/L	1	11/6/2017 03:53
2-Hexanone	U		0.13	0.42	µg/L	1	11/6/2017 03:53
4-Methyl-2-pentanone	U		0.11	0.40	µg/L	1	11/6/2017 03:53
Benzene	U		0.30	1.0	µg/L	1	11/6/2017 03:53
Bromochloromethane	U		0.20	0.66	µg/L	1	11/6/2017 03:53
Bromodichloromethane	U		0.23	0.78	µg/L	1	11/6/2017 03:53
Bromoform	U		0.77	2.6	µg/L	1	11/6/2017 03:53
Bromomethane	U		0.38	1.3	µg/L	1	11/6/2017 03:53
Carbon disulfide	U		0.23	0.76	µg/L	1	11/6/2017 03:53
Carbon tetrachloride	U		0.31	1.0	µg/L	1	11/6/2017 03:53
Chlorobenzene	U		0.27	0.90	µg/L	1	11/6/2017 03:53
Chloroethane	U		0.29	0.97	µg/L	1	11/6/2017 03:53
Chloroform	U		0.26	0.86	µg/L	1	11/6/2017 03:53
Chloromethane	U		0.17	0.57	µg/L	1	11/6/2017 03:53
cis-1,2-Dichloroethene	U		0.25	0.85	µg/L	1	11/6/2017 03:53
cis-1,3-Dichloropropene	U		0.39	1.3	µg/L	1	11/6/2017 03:53
Cyclohexane	U		0.22	0.73	µg/L	1	11/6/2017 03:53
Dibromochloromethane	U		0.38	1.2	µg/L	1	11/6/2017 03:53
Dichlorodifluoromethane	U		0.13	0.44	µg/L	1	11/6/2017 03:53
Ethylbenzene	U		0.40	1.3	µg/L	1	11/6/2017 03:53
Isopropylbenzene	U		0.31	1.0	µg/L	1	11/6/2017 03:53
m,p-Xylene	U		0.98	3.3	µg/L	1	11/6/2017 03:53
Methyl tert-butyl ether	U		0.12	0.40	µg/L	1	11/6/2017 03:53
Methylcyclohexane	U		0.27	0.90	µg/L	1	11/6/2017 03:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-5
Collection Date: 10/25/2017 01:40 PM

Work Order: 17101814
Lab ID: 17101814-05
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylene chloride	U		0.56	1.8	µg/L	1	11/6/2017 03:53
o-Xylene	U		0.35	1.2	µg/L	1	11/6/2017 03:53
Styrene	U		0.24	0.79	µg/L	1	11/6/2017 03:53
Tetrachloroethene	11		0.27	0.91	µg/L	1	11/6/2017 03:53
Toluene	U		0.37	1.2	µg/L	1	11/6/2017 03:53
trans-1,2-Dichloroethene	U		0.28	0.93	µg/L	1	11/6/2017 03:53
trans-1,3-Dichloropropene	U		0.82	2.7	µg/L	1	11/6/2017 03:53
Trichloroethene	10		0.30	0.99	µg/L	1	11/6/2017 03:53
Trichlorofluoromethane	U		0.20	0.66	µg/L	1	11/6/2017 03:53
Vinyl chloride	U		0.20	0.68	µg/L	1	11/6/2017 03:53
Xylenes, Total	U		1.3	4.4	µg/L	1	11/6/2017 03:53
Surr: 1,2-Dichloroethane-d4	105			75-120	%REC	1	11/6/2017 03:53
Surr: 4-Bromofluorobenzene	100			80-110	%REC	1	11/6/2017 03:53
Surr: Dibromofluoromethane	97.4			85-115	%REC	1	11/6/2017 03:53
Surr: Toluene-d8	98.9			85-110	%REC	1	11/6/2017 03:53

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-6
Collection Date: 10/25/2017 02:15 PM

Work Order: 17101814
Lab ID: 17101814-06
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B			Analyst: BG	
1,1,1-Trichloroethane	U		0.36	1.2	µg/L	1	11/6/2017 04:18
1,1,2,2-Tetrachloroethane	U		0.19	0.62	µg/L	1	11/6/2017 04:18
1,1,2-Trichloroethane	U		0.40	1.3	µg/L	1	11/6/2017 04:18
1,1-Dichloroethane	U		0.31	1.0	µg/L	1	11/6/2017 04:18
1,1-Dichloroethene	U		0.28	0.92	µg/L	1	11/6/2017 04:18
1,2,3-Trichlorobenzene	U		0.17	0.55	µg/L	1	11/6/2017 04:18
1,2,4-Trichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 04:18
1,2-Dibromo-3-chloropropane	U		0.97	3.2	µg/L	1	11/6/2017 04:18
1,2-Dibromoethane	U		0.98	3.3	µg/L	1	11/6/2017 04:18
1,2-Dichlorobenzene	U		0.22	0.73	µg/L	1	11/6/2017 04:18
1,2-Dichloroethane	U		0.17	0.55	µg/L	1	11/6/2017 04:18
1,2-Dichloropropane	U		0.25	0.83	µg/L	1	11/6/2017 04:18
1,3-Dichlorobenzene	U		0.29	0.96	µg/L	1	11/6/2017 04:18
1,4-Dichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 04:18
2-Butanone	U		0.58	2.0	µg/L	1	11/6/2017 04:18
2-Hexanone	U		0.13	0.42	µg/L	1	11/6/2017 04:18
4-Methyl-2-pentanone	U		0.11	0.40	µg/L	1	11/6/2017 04:18
Benzene	U		0.30	1.0	µg/L	1	11/6/2017 04:18
Bromochloromethane	U		0.20	0.66	µg/L	1	11/6/2017 04:18
Bromodichloromethane	U		0.23	0.78	µg/L	1	11/6/2017 04:18
Bromoform	U		0.77	2.6	µg/L	1	11/6/2017 04:18
Bromomethane	U		0.38	1.3	µg/L	1	11/6/2017 04:18
Carbon disulfide	U		0.23	0.76	µg/L	1	11/6/2017 04:18
Carbon tetrachloride	U		0.31	1.0	µg/L	1	11/6/2017 04:18
Chlorobenzene	U		0.27	0.90	µg/L	1	11/6/2017 04:18
Chloroethane	U		0.29	0.97	µg/L	1	11/6/2017 04:18
Chloroform	U		0.26	0.86	µg/L	1	11/6/2017 04:18
Chloromethane	U		0.17	0.57	µg/L	1	11/6/2017 04:18
cis-1,2-Dichloroethene	0.56	J	0.25	0.85	µg/L	1	11/6/2017 04:18
cis-1,3-Dichloropropene	U		0.39	1.3	µg/L	1	11/6/2017 04:18
Cyclohexane	U		0.22	0.73	µg/L	1	11/6/2017 04:18
Dibromochloromethane	U		0.38	1.2	µg/L	1	11/6/2017 04:18
Dichlorodifluoromethane	U		0.13	0.44	µg/L	1	11/6/2017 04:18
Ethylbenzene	U		0.40	1.3	µg/L	1	11/6/2017 04:18
Isopropylbenzene	U		0.31	1.0	µg/L	1	11/6/2017 04:18
m,p-Xylene	U		0.98	3.3	µg/L	1	11/6/2017 04:18
Methyl tert-butyl ether	U		0.12	0.40	µg/L	1	11/6/2017 04:18
Methylcyclohexane	U		0.27	0.90	µg/L	1	11/6/2017 04:18

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-6
Collection Date: 10/25/2017 02:15 PM

Work Order: 17101814
Lab ID: 17101814-06
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylene chloride	U		0.56	1.8	µg/L	1	11/6/2017 04:18
o-Xylene	U		0.35	1.2	µg/L	1	11/6/2017 04:18
Styrene	U		0.24	0.79	µg/L	1	11/6/2017 04:18
Tetrachloroethene	92		1.4	4.6	µg/L	5	11/6/2017 20:23
Toluene	U		0.37	1.2	µg/L	1	11/6/2017 04:18
trans-1,2-Dichloroethene	U		0.28	0.93	µg/L	1	11/6/2017 04:18
trans-1,3-Dichloropropene	U		0.82	2.7	µg/L	1	11/6/2017 04:18
Trichloroethene	9.0		0.30	0.99	µg/L	1	11/6/2017 04:18
Trichlorofluoromethane	U		0.20	0.66	µg/L	1	11/6/2017 04:18
Vinyl chloride	U		0.20	0.68	µg/L	1	11/6/2017 04:18
Xylenes, Total	U		1.3	4.4	µg/L	1	11/6/2017 04:18
Surr: 1,2-Dichloroethane-d4	104			75-120	%REC	1	11/6/2017 04:18
Surr: 1,2-Dichloroethane-d4	108			75-120	%REC	5	11/6/2017 20:23
Surr: 4-Bromofluorobenzene	99.6			80-110	%REC	1	11/6/2017 04:18
Surr: 4-Bromofluorobenzene	99.4			80-110	%REC	5	11/6/2017 20:23
Surr: Dibromofluoromethane	99.2			85-115	%REC	1	11/6/2017 04:18
Surr: Dibromofluoromethane	95.6			85-115	%REC	5	11/6/2017 20:23
Surr: Toluene-d8	97.8			85-110	%REC	1	11/6/2017 04:18
Surr: Toluene-d8	99.0			85-110	%REC	5	11/6/2017 20:23

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-7
Collection Date: 10/25/2017 02:47 PM

Work Order: 17101814
Lab ID: 17101814-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B			Analyst: BG	
1,1,1-Trichloroethane	U		0.36	1.2	µg/L	1	11/6/2017 04:44
1,1,2,2-Tetrachloroethane	U		0.19	0.62	µg/L	1	11/6/2017 04:44
1,1,2-Trichloroethane	U		0.40	1.3	µg/L	1	11/6/2017 04:44
1,1-Dichloroethane	U		0.31	1.0	µg/L	1	11/6/2017 04:44
1,1-Dichloroethene	U		0.28	0.92	µg/L	1	11/6/2017 04:44
1,2,3-Trichlorobenzene	U		0.17	0.55	µg/L	1	11/6/2017 04:44
1,2,4-Trichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 04:44
1,2-Dibromo-3-chloropropane	U		0.97	3.2	µg/L	1	11/6/2017 04:44
1,2-Dibromoethane	U		0.98	3.3	µg/L	1	11/6/2017 04:44
1,2-Dichlorobenzene	U		0.22	0.73	µg/L	1	11/6/2017 04:44
1,2-Dichloroethane	U		0.17	0.55	µg/L	1	11/6/2017 04:44
1,2-Dichloropropane	U		0.25	0.83	µg/L	1	11/6/2017 04:44
1,3-Dichlorobenzene	U		0.29	0.96	µg/L	1	11/6/2017 04:44
1,4-Dichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 04:44
2-Butanone	U		0.58	2.0	µg/L	1	11/6/2017 04:44
2-Hexanone	U		0.13	0.42	µg/L	1	11/6/2017 04:44
4-Methyl-2-pentanone	U		0.11	0.40	µg/L	1	11/6/2017 04:44
Benzene	U		0.30	1.0	µg/L	1	11/6/2017 04:44
Bromochloromethane	U		0.20	0.66	µg/L	1	11/6/2017 04:44
Bromodichloromethane	U		0.23	0.78	µg/L	1	11/6/2017 04:44
Bromoform	U		0.77	2.6	µg/L	1	11/6/2017 04:44
Bromomethane	U		0.38	1.3	µg/L	1	11/6/2017 04:44
Carbon disulfide	U		0.23	0.76	µg/L	1	11/6/2017 04:44
Carbon tetrachloride	U		0.31	1.0	µg/L	1	11/6/2017 04:44
Chlorobenzene	U		0.27	0.90	µg/L	1	11/6/2017 04:44
Chloroethane	U		0.29	0.97	µg/L	1	11/6/2017 04:44
Chloroform	U		0.26	0.86	µg/L	1	11/6/2017 04:44
Chloromethane	U		0.17	0.57	µg/L	1	11/6/2017 04:44
cis-1,2-Dichloroethene	U		0.25	0.85	µg/L	1	11/6/2017 04:44
cis-1,3-Dichloropropene	U		0.39	1.3	µg/L	1	11/6/2017 04:44
Cyclohexane	U		0.22	0.73	µg/L	1	11/6/2017 04:44
Dibromochloromethane	U		0.38	1.2	µg/L	1	11/6/2017 04:44
Dichlorodifluoromethane	U		0.13	0.44	µg/L	1	11/6/2017 04:44
Ethylbenzene	U		0.40	1.3	µg/L	1	11/6/2017 04:44
Isopropylbenzene	U		0.31	1.0	µg/L	1	11/6/2017 04:44
m,p-Xylene	U		0.98	3.3	µg/L	1	11/6/2017 04:44
Methyl tert-butyl ether	U		0.12	0.40	µg/L	1	11/6/2017 04:44
Methylcyclohexane	U		0.27	0.90	µg/L	1	11/6/2017 04:44

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: LG-B-7
Collection Date: 10/25/2017 02:47 PM

Work Order: 17101814
Lab ID: 17101814-07
Matrix: GROUNDWATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylene chloride	U		0.56	1.8	µg/L	1	11/6/2017 04:44
o-Xylene	U		0.35	1.2	µg/L	1	11/6/2017 04:44
Styrene	U		0.24	0.79	µg/L	1	11/6/2017 04:44
Tetrachloroethene	1.6		0.27	0.91	µg/L	1	11/6/2017 04:44
Toluene	U		0.37	1.2	µg/L	1	11/6/2017 04:44
trans-1,2-Dichloroethene	U		0.28	0.93	µg/L	1	11/6/2017 04:44
trans-1,3-Dichloropropene	U		0.82	2.7	µg/L	1	11/6/2017 04:44
Trichloroethene	U		0.30	0.99	µg/L	1	11/6/2017 04:44
Trichlorofluoromethane	U		0.20	0.66	µg/L	1	11/6/2017 04:44
Vinyl chloride	U		0.20	0.68	µg/L	1	11/6/2017 04:44
Xylenes, Total	U		1.3	4.4	µg/L	1	11/6/2017 04:44
Surr: 1,2-Dichloroethane-d4	106			75-120	%REC	1	11/6/2017 04:44
Surr: 4-Bromofluorobenzene	98.2			80-110	%REC	1	11/6/2017 04:44
Surr: Dibromofluoromethane	100			85-115	%REC	1	11/6/2017 04:44
Surr: Toluene-d8	98.7			85-110	%REC	1	11/6/2017 04:44

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: Trip Blank
Collection Date: 10/25/2017

Work Order: 17101814
Lab ID: 17101814-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			Method: SW8260B			Analyst: BG	
1,1,1-Trichloroethane	U		0.36	1.2	µg/L	1	11/6/2017 01:44
1,1,2,2-Tetrachloroethane	U		0.19	0.62	µg/L	1	11/6/2017 01:44
1,1,2-Trichloroethane	U		0.40	1.3	µg/L	1	11/6/2017 01:44
1,1-Dichloroethane	U		0.31	1.0	µg/L	1	11/6/2017 01:44
1,1-Dichloroethene	U		0.28	0.92	µg/L	1	11/6/2017 01:44
1,2,3-Trichlorobenzene	U		0.17	0.55	µg/L	1	11/6/2017 01:44
1,2,4-Trichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 01:44
1,2-Dibromo-3-chloropropane	U		0.97	3.2	µg/L	1	11/6/2017 01:44
1,2-Dibromoethane	U		0.98	3.3	µg/L	1	11/6/2017 01:44
1,2-Dichlorobenzene	U		0.22	0.73	µg/L	1	11/6/2017 01:44
1,2-Dichloroethane	U		0.17	0.55	µg/L	1	11/6/2017 01:44
1,2-Dichloropropane	U		0.25	0.83	µg/L	1	11/6/2017 01:44
1,3-Dichlorobenzene	U		0.29	0.96	µg/L	1	11/6/2017 01:44
1,4-Dichlorobenzene	U		0.21	0.71	µg/L	1	11/6/2017 01:44
2-Butanone	U		0.58	2.0	µg/L	1	11/6/2017 01:44
2-Hexanone	U		0.13	0.42	µg/L	1	11/6/2017 01:44
4-Methyl-2-pentanone	U		0.11	0.40	µg/L	1	11/6/2017 01:44
Benzene	U		0.30	1.0	µg/L	1	11/6/2017 01:44
Bromochloromethane	U		0.20	0.66	µg/L	1	11/6/2017 01:44
Bromodichloromethane	U		0.23	0.78	µg/L	1	11/6/2017 01:44
Bromoform	U		0.77	2.6	µg/L	1	11/6/2017 01:44
Bromomethane	U		0.38	1.3	µg/L	1	11/6/2017 01:44
Carbon disulfide	U		0.23	0.76	µg/L	1	11/6/2017 01:44
Carbon tetrachloride	U		0.31	1.0	µg/L	1	11/6/2017 01:44
Chlorobenzene	U		0.27	0.90	µg/L	1	11/6/2017 01:44
Chloroethane	U		0.29	0.97	µg/L	1	11/6/2017 01:44
Chloroform	0.47	J	0.26	0.86	µg/L	1	11/6/2017 01:44
Chloromethane	U		0.17	0.57	µg/L	1	11/6/2017 01:44
cis-1,2-Dichloroethene	U		0.25	0.85	µg/L	1	11/6/2017 01:44
cis-1,3-Dichloropropene	U		0.39	1.3	µg/L	1	11/6/2017 01:44
Cyclohexane	U		0.22	0.73	µg/L	1	11/6/2017 01:44
Dibromochloromethane	U		0.38	1.2	µg/L	1	11/6/2017 01:44
Dichlorodifluoromethane	U		0.13	0.44	µg/L	1	11/6/2017 01:44
Ethylbenzene	U		0.40	1.3	µg/L	1	11/6/2017 01:44
Isopropylbenzene	U		0.31	1.0	µg/L	1	11/6/2017 01:44
m,p-Xylene	U		0.98	3.3	µg/L	1	11/6/2017 01:44
Methyl tert-butyl ether	U		0.12	0.40	µg/L	1	11/6/2017 01:44
Methylcyclohexane	U		0.27	0.90	µg/L	1	11/6/2017 01:44

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Project: Site ID: 12.57/12.58 (21-41365B)
Sample ID: Trip Blank
Collection Date: 10/25/2017

Work Order: 17101814
Lab ID: 17101814-08
Matrix: WATER

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Methylene chloride	U		0.56	1.8	µg/L	1	11/6/2017 01:44
o-Xylene	U		0.35	1.2	µg/L	1	11/6/2017 01:44
Styrene	U		0.24	0.79	µg/L	1	11/6/2017 01:44
Tetrachloroethene	U		0.27	0.91	µg/L	1	11/6/2017 01:44
Toluene	U		0.37	1.2	µg/L	1	11/6/2017 01:44
trans-1,2-Dichloroethene	U		0.28	0.93	µg/L	1	11/6/2017 01:44
trans-1,3-Dichloropropene	U		0.82	2.7	µg/L	1	11/6/2017 01:44
Trichloroethene	U		0.30	0.99	µg/L	1	11/6/2017 01:44
Trichlorofluoromethane	U		0.20	0.66	µg/L	1	11/6/2017 01:44
Vinyl chloride	U		0.20	0.68	µg/L	1	11/6/2017 01:44
Xylenes, Total	U		1.3	4.4	µg/L	1	11/6/2017 01:44
Surr: 1,2-Dichloroethane-d4	104			75-120	%REC	1	11/6/2017 01:44
Surr: 4-Bromofluorobenzene	97.8			80-110	%REC	1	11/6/2017 01:44
Surr: Dibromofluoromethane	98.0			85-115	%REC	1	11/6/2017 01:44
Surr: Toluene-d8	98.6			85-110	%REC	1	11/6/2017 01:44

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 15-Dec-17

Client: Ramboll Environ US Corporation
Work Order: 17101814
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: **R223840b** Instrument ID **VMS5** Method: **SW8260B**

MBLK		Sample ID: VBLKW1-171105-R223840b				Units: µg/L		Analysis Date: 11/6/2017 01:19 AM		
Client ID:		Run ID: VMS5_171105A				SeqNo: 4742501		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	U	1.2								
1,1,2,2-Tetrachloroethane	U	0.62								
1,1,2-Trichloroethane	U	1.3								
1,1-Dichloroethane	U	1.0								
1,1-Dichloroethene	U	0.92								
1,2,3-Trichlorobenzene	U	0.55								
1,2,4-Trichlorobenzene	U	0.71								
1,2-Dibromo-3-chloropropane	U	3.2								
1,2-Dibromoethane	U	3.3								
1,2-Dichlorobenzene	U	0.73								
1,2-Dichloroethane	U	0.55								
1,2-Dichloropropane	U	0.83								
1,3-Dichlorobenzene	U	0.96								
1,4-Dichlorobenzene	U	0.71								
2-Butanone	U	2.0								
2-Hexanone	U	0.42								
4-Methyl-2-pentanone	U	0.40								
Acetone	U	3.1								
Benzene	U	1.0								
Bromochloromethane	U	0.66								
Bromodichloromethane	U	0.78								
Bromoform	U	2.6								
Bromomethane	U	1.3								
Carbon disulfide	U	0.76								
Carbon tetrachloride	U	1.0								
Chlorobenzene	U	0.90								
Chloroethane	U	0.97								
Chloroform	U	0.86								
Chloromethane	U	0.57								
cis-1,2-Dichloroethene	U	0.85								
cis-1,3-Dichloropropene	U	1.3								
Cyclohexane	U	0.73								
Dibromochloromethane	U	1.2								
Dichlorodifluoromethane	U	0.44								
Ethylbenzene	U	1.3								
Isopropylbenzene	U	1.0								
m,p-Xylene	U	3.3								
Methyl tert-butyl ether	U	0.40								
Methylcyclohexane	U	0.90								
Methylene chloride	U	1.8								
o-Xylene	U	1.2								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101814
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: R223840b	Instrument ID VMS5	Method: SW8260B						
Styrene	U	0.79						
Tetrachloroethene	U	0.91						
Toluene	U	1.2						
trans-1,2-Dichloroethene	U	0.93						
trans-1,3-Dichloropropene	U	2.7						
Trichloroethene	U	0.99						
Trichlorofluoromethane	U	0.66						
Vinyl chloride	U	0.68						
Xylenes, Total	U	4.4						
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>20.63</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>103</i>	<i>75-120</i>	<i>0</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>19.64</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>98.2</i>	<i>80-110</i>	<i>0</i>	
<i>Surr: Dibromofluoromethane</i>	<i>19.36</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>96.8</i>	<i>85-115</i>	<i>0</i>	
<i>Surr: Toluene-d8</i>	<i>19.89</i>	<i>0</i>	<i>20</i>	<i>0</i>	<i>99.4</i>	<i>85-110</i>	<i>0</i>	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101814
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: **R223840b** Instrument ID **VMS5** Method: **SW8260B**

LCS		Sample ID: VLCSW2-171105-R223840b				Units: µg/L		Analysis Date: 11/6/2017 12:27 PM		
Client ID:		Run ID: VMS5_171105A				SeqNo: 4742518		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	20.99	1.2	20	0	105	75-130	0			
1,1,2,2-Tetrachloroethane	20.98	0.62	20	0	105	75-130	0			
1,1,2-Trichloroethane	19.22	1.3	20	0	96.1	75-125	0			
1,1-Dichloroethane	19.21	1.0	20	0	96	75-133	0			
1,1-Dichloroethene	22.53	0.92	20	0	113	70-145	0			
1,2,3-Trichlorobenzene	18.28	0.55	20	0	91.4	70-140	0			
1,2,4-Trichlorobenzene	18.17	0.71	20	0	90.8	70-135	0			
1,2-Dibromo-3-chloropropane	18.6	3.2	20	0	93	60-130	0			
1,2-Dibromoethane	19.63	3.3	20	0	98.2	90-195	0			
1,2-Dichlorobenzene	17.91	0.73	20	0	89.6	70-130	0			
1,2-Dichloroethane	19.73	0.55	20	0	98.6	78-125	0			
1,2-Dichloropropane	20.07	0.83	20	0	100	75-125	0			
1,3-Dichlorobenzene	18.52	0.96	20	0	92.6	75-130	0			
1,4-Dichlorobenzene	18.56	0.71	20	0	92.8	75-130	0			
2-Butanone	19	2.0	20	0	95	55-150	0			
2-Hexanone	19.93	0.42	20	0	99.6	60-135	0			
4-Methyl-2-pentanone	28.68	0.40	20	0	143	77-178	0			
Acetone	18.45	3.1	20	0	92.2	60-160	0			
Benzene	20.44	1.0	20	0	102	85-125	0			
Bromochloromethane	18.16	0.66	20	0	90.8	72-141	0			
Bromodichloromethane	19.18	0.78	20	0	95.9	75-125	0			
Bromoform	16.68	2.6	20	0	83.4	60-125	0			
Bromomethane	19.91	1.3	20	0	99.6	30-185	0			
Carbon disulfide	21.3	0.76	20	0	106	60-165	0			
Carbon tetrachloride	21.39	1.0	20	0	107	65-140	0			
Chlorobenzene	18.72	0.90	20	0	93.6	80-120	0			
Chloroethane	16.83	0.97	20	0	84.2	50-140	0			
Chloroform	17.63	0.86	20	0	88.2	80-130	0			
Chloromethane	15.46	0.57	20	0	77.3	46-148	0			
cis-1,2-Dichloroethene	18.16	0.85	20	0	90.8	75-134	0			
cis-1,3-Dichloropropene	18.92	1.3	20	0	94.6	70-130	0			
Dibromochloromethane	18.56	1.2	20	0	92.8	60-115	0			
Dichlorodifluoromethane	16.75	0.44	20	0	83.8	20-120	0			
Ethylbenzene	19.12	1.3	20	0	95.6	85-125	0			
Isopropylbenzene	19.03	1.0	20	0	95.2	80-127	0			
m,p-Xylene	38.65	3.3	40	0	96.6	75-130	0			
Methyl tert-butyl ether	16.82	0.40	20	0	84.1	80-130	0			
Methylene chloride	19.54	1.8	20	0	97.7	75-140	0			
o-Xylene	19.14	1.2	20	0	95.7	80-125	0			
Styrene	19.26	0.79	20	0	96.3	83-137	0			
Tetrachloroethene	20.25	0.91	20	0	101	68-166	0			
Toluene	19.38	1.2	20	0	96.9	85-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101814
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: R223840b	Instrument ID VMS5		Method: SW8260B				
trans-1,2-Dichloroethene	19.76	0.93	20	0	98.8	80-140	0
trans-1,3-Dichloropropene	18.16	2.7	20	0	90.8	56-132	0
Trichloroethene	19.96	0.99	20	0	99.8	84-130	0
Trichlorofluoromethane	18.25	0.66	20	0	91.2	60-140	0
Vinyl chloride	16.44	0.68	20	0	82.2	50-136	0
Xylenes, Total	57.79	4.4	60	0	96.3	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	20.57	0	20	0	103	75-120	0
<i>Surr: 4-Bromofluorobenzene</i>	20.11	0	20	0	101	80-110	0
<i>Surr: Dibromofluoromethane</i>	19.31	0	20	0	96.6	85-115	0
<i>Surr: Toluene-d8</i>	20.06	0	20	0	100	85-110	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101814
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: **R223840b** Instrument ID **VMS5** Method: **SW8260B**

MS				Sample ID: 1711015-01A MS			Units: µg/L		Analysis Date: 11/6/2017 09:00 AM	
Client ID:				Run ID: VMS5_171105A			SeqNo: 4742516		Prep Date:	
									DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	103.8	6.0	100	0	104	75-130	0			
1,1,2,2-Tetrachloroethane	96.85	3.1	100	0	96.8	75-130	0			
1,1,2-Trichloroethane	89.15	6.6	100	0	89.2	75-125	0			
1,1-Dichloroethane	99.95	5.2	100	0	100	75-133	0			
1,1-Dichloroethene	122.6	4.6	100	0	123	70-145	0			
1,2,3-Trichlorobenzene	72.95	2.8	100	0	73	70-140	0			
1,2,4-Trichlorobenzene	78.4	3.6	100	0	78.4	70-135	0			
1,2-Dibromo-3-chloropropane	74.6	16	100	0	74.6	60-130	0			
1,2-Dibromoethane	90.2	16	100	0	90.2	90-195	0			
1,2-Dichlorobenzene	82.7	3.6	100	0	82.7	70-130	0			
1,2-Dichloroethane	94.35	2.8	100	0	94.4	78-125	0			
1,2-Dichloropropane	95.2	4.2	100	0	95.2	75-125	0			
1,3-Dichlorobenzene	86.9	4.8	100	0	86.9	75-130	0			
1,4-Dichlorobenzene	86.5	3.6	100	0	86.5	75-130	0			
2-Butanone	96.35	9.8	100	0	96.4	55-150	0			
2-Hexanone	95.25	2.1	100	0	95.2	60-135	0			
4-Methyl-2-pentanone	130.4	2.0	100	0	130	77-178	0			
Acetone	139.3	15	100	0	139	60-160	0			
Benzene	299.2	5.0	100	206.6	92.6	85-125	0			
Bromochloromethane	93.35	3.3	100	0	93.4	72-141	0			
Bromodichloromethane	91.75	3.9	100	0	91.8	75-125	0			
Bromoform	72.9	13	100	0	72.9	60-125	0			
Bromomethane	89.35	6.3	100	0	89.4	30-185	0			
Carbon disulfide	110.6	3.8	100	0	111	60-165	0			
Carbon tetrachloride	106.8	5.2	100	0	107	65-140	0			
Chlorobenzene	89.1	4.5	100	0	89.1	80-120	0			
Chloroethane	86.7	4.8	100	0	86.7	50-140	0			
Chloroform	89.9	4.3	100	0	89.9	80-130	0			
Chloromethane	77.3	2.8	100	0	77.3	46-148	0			
cis-1,2-Dichloroethene	90.25	4.2	100	0	90.2	75-134	0			
cis-1,3-Dichloropropene	82.6	6.6	100	0	82.6	70-130	0			
Dibromochloromethane	86.7	6.2	100	0	86.7	60-115	0			
Dichlorodifluoromethane	85.7	2.2	100	0	85.7	20-120	0			
Ethylbenzene	99.6	6.7	100	6.75	92.8	85-125	0			
Isopropylbenzene	93.95	5.2	100	0	94	80-127	0			
m,p-Xylene	239.8	16	200	51.4	94.2	75-130	0			
Methyl tert-butyl ether	81.3	2.0	100	0	81.3	80-130	0			
Methylene chloride	99.65	9.2	100	0	99.6	75-140	0			
o-Xylene	92.25	5.9	100	0	92.2	80-125	0			
Styrene	89.7	4.0	100	0	89.7	83-137	0			
Tetrachloroethene	98.05	4.6	100	0	98	68-166	0			
Toluene	96.85	6.1	100	3.7	93.2	85-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101814
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: R223840b	Instrument ID VMS5		Method: SW8260B				
trans-1,2-Dichloroethene	102.9	4.6	100	0	103	80-140	0
trans-1,3-Dichloropropene	79.75	14	100	0	79.8	56-132	0
Trichloroethene	94.6	5.0	100	0	94.6	84-130	0
Trichlorofluoromethane	97.35	3.3	100	0	97.4	60-140	0
Vinyl chloride	86.3	3.4	100	0	86.3	50-136	0
Xylenes, Total	332.1	22	300	51.4	93.6	80-126	0
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>104.2</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>104</i>	<i>75-120</i>	<i>0</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>103</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>103</i>	<i>80-110</i>	<i>0</i>
<i>Surr: Dibromofluoromethane</i>	<i>99.4</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>99.4</i>	<i>85-115</i>	<i>0</i>
<i>Surr: Toluene-d8</i>	<i>100</i>	<i>0</i>	<i>100</i>	<i>0</i>	<i>100</i>	<i>85-110</i>	<i>0</i>

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101814
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: **R223840b** Instrument ID **VMS5** Method: **SW8260B**

MSD				Sample ID: 1711015-01A MSD			Units: µg/L		Analysis Date: 11/6/2017 09:25 AM	
Client ID:				Run ID: VMS5_171105A			SeqNo: 4742517		Prep Date:	
									DF: 5	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	107.6	6.0	100	0	108	75-130	103.8	3.64	30	
1,1,2,2-Tetrachloroethane	97.35	3.1	100	0	97.4	75-130	96.85	0.515	30	
1,1,2-Trichloroethane	91.5	6.6	100	0	91.5	75-125	89.15	2.6	30	
1,1-Dichloroethane	102	5.2	100	0	102	75-133	99.95	1.98	30	
1,1-Dichloroethene	125.2	4.6	100	0	125	70-145	122.6	2.06	30	
1,2,3-Trichlorobenzene	79.85	2.8	100	0	79.8	70-140	72.95	9.03	30	
1,2,4-Trichlorobenzene	82.85	3.6	100	0	82.8	70-135	78.4	5.52	30	
1,2-Dibromo-3-chloropropane	77.95	16	100	0	78	60-130	74.6	4.39	30	
1,2-Dibromoethane	94	16	100	0	94	90-195	90.2	4.13	30	
1,2-Dichlorobenzene	87.05	3.6	100	0	87	70-130	82.7	5.13	30	
1,2-Dichloroethane	99.1	2.8	100	0	99.1	78-125	94.35	4.91	30	
1,2-Dichloropropane	97.95	4.2	100	0	98	75-125	95.2	2.85	30	
1,3-Dichlorobenzene	89.45	4.8	100	0	89.4	75-130	86.9	2.89	30	
1,4-Dichlorobenzene	88.45	3.6	100	0	88.4	75-130	86.5	2.23	30	
2-Butanone	99.3	9.8	100	0	99.3	55-150	96.35	3.02	30	
2-Hexanone	92.35	2.1	100	0	92.4	60-135	95.25	3.09	30	
4-Methyl-2-pentanone	131.5	2.0	100	0	132	77-178	130.4	0.802	30	
Acetone	137.1	15	100	0	137	60-160	139.3	1.59	30	
Benzene	295.5	5.0	100	206.6	88.8	85-125	299.2	1.26	30	
Bromochloromethane	96.25	3.3	100	0	96.2	72-141	93.35	3.06	30	
Bromodichloromethane	93.7	3.9	100	0	93.7	75-125	91.75	2.1	30	
Bromoform	76.9	13	100	0	76.9	60-125	72.9	5.34	30	
Bromomethane	100.8	6.3	100	0	101	30-185	89.35	12.1	30	
Carbon disulfide	114.6	3.8	100	0	115	60-165	110.6	3.51	30	
Carbon tetrachloride	110.4	5.2	100	0	110	65-140	106.8	3.36	30	
Chlorobenzene	90.55	4.5	100	0	90.6	80-120	89.1	1.61	30	
Chloroethane	89.3	4.8	100	0	89.3	50-140	86.7	2.95	30	
Chloroform	92.35	4.3	100	0	92.4	80-130	89.9	2.69	30	
Chloromethane	79.1	2.8	100	0	79.1	46-148	77.3	2.3	30	
cis-1,2-Dichloroethene	93.25	4.2	100	0	93.2	75-134	90.25	3.27	30	
cis-1,3-Dichloropropene	86.4	6.6	100	0	86.4	70-130	82.6	4.5	30	
Dibromochloromethane	88.75	6.2	100	0	88.8	60-115	86.7	2.34	30	
Dichlorodifluoromethane	87.8	2.2	100	0	87.8	20-120	85.7	2.42	30	
Ethylbenzene	101.6	6.7	100	6.75	94.8	85-125	99.6	1.99	30	
Isopropylbenzene	96.3	5.2	100	0	96.3	80-127	93.95	2.47	30	
m,p-Xylene	241.8	16	200	51.4	95.2	75-130	239.8	0.83	30	
Methyl tert-butyl ether	85.2	2.0	100	0	85.2	80-130	81.3	4.68	30	
Methylene chloride	102.4	9.2	100	0	102	75-140	99.65	2.72	30	
o-Xylene	94.7	5.9	100	0	94.7	80-125	92.25	2.62	30	
Styrene	93.4	4.0	100	0	93.4	83-137	89.7	4.04	30	
Tetrachloroethene	99.8	4.6	100	0	99.8	68-166	98.05	1.77	30	
Toluene	99.3	6.1	100	3.7	95.6	85-125	96.85	2.5	30	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
Work Order: 17101814
Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: R223840b	Instrument ID VMS5			Method: SW8260B					
trans-1,2-Dichloroethene	107.4	4.6	100	0	107	80-140	102.9	4.23	30
trans-1,3-Dichloropropene	83.4	14	100	0	83.4	56-132	79.75	4.47	30
Trichloroethene	96.65	5.0	100	0	96.6	84-130	94.6	2.14	30
Trichlorofluoromethane	97.7	3.3	100	0	97.7	60-140	97.35	0.359	30
Vinyl chloride	88.1	3.4	100	0	88.1	50-136	86.3	2.06	30
Xylenes, Total	336.6	22	300	51.4	95	80-126	332.1	1.33	30
<i>Surr: 1,2-Dichloroethane-d4</i>	106	0	100	0	106	75-120	104.2	1.71	30
<i>Surr: 4-Bromofluorobenzene</i>	101.1	0	100	0	101	80-110	103	1.86	30
<i>Surr: Dibromofluoromethane</i>	100	0	100	0	100	85-115	99.4	0.652	30
<i>Surr: Toluene-d8</i>	99.75	0	100	0	99.8	85-110	100	0.3	30

The following samples were analyzed in this batch:

17101814-01A	17101814-02A	17101814-03A
17101814-04A	17101814-05A	17101814-06A
17101814-07A	17101814-08A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Ramboll Environ US Corporation
 Work Order: 17101814
 Project: Site ID: 12.57/12.58 (21-41365B)

QC BATCH REPORT

Batch ID: **R223885c** Instrument ID **VMS5** Method: **SW8260B**

MBLK				Sample ID: VBLKW1-171106-R223885c				Units: µg/L			Analysis Date: 11/6/2017 02:11 PM	
Client ID:			Run ID: VMS5_171106A				SeqNo: 4745008		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		
Tetrachloroethene	U	0.91										
Surr: 1,2-Dichloroethane-d4	20.83	0	20	0	104	75-120	0					
Surr: 4-Bromofluorobenzene	19.97	0	20	0	99.8	80-110	0					
Surr: Dibromofluoromethane	19.41	0	20	0	97	85-115	0					
Surr: Toluene-d8	19.95	0	20	0	99.8	85-110	0					

LCS					Sample ID: VLCSW1-171106-R223885c			Units: µg/L		Analysis Date: 11/6/2017 01:20 PM		
Client ID:			Run ID: VMS5_171106A			SeqNo: 4745007		Prep Date:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		
Tetrachloroethene	19.56	0.91	20	0	97.8	68-166	0					
Surr: 1,2-Dichloroethane-d4	21.12	0	20	0	106	75-120	0					
Surr: 4-Bromofluorobenzene	20.77	0	20	0	104	80-110	0					
Surr: Dibromofluoromethane	20.09	0	20	0	100	85-115	0					
Surr: Toluene-d8	20.07	0	20	0	100	85-110	0					

MS					Sample ID: 1711106-03A MS		Units: µg/L		Analysis Date: 11/6/2017 11:48 PM		
Client ID:			Run ID: VMS5_171106A			SeqNo: 4745011		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Tetrachloroethene	43.42	0.91	40	0	109	68-166	0				
Surr: 1,2-Dichloroethane-d4	20.93	0	20	0	105	75-120	0				
Surr: 4-Bromofluorobenzene	20.92	0	20	0	105	80-110	0				
Surr: Dibromofluoromethane	20.05	0	20	0	100	85-115	0				
Surr: Toluene-d8	20.33	0	20	0	102	85-110	0				

MSD					Sample ID: 1711106-03A MSD		Units: µg/L		Analysis Date: 11/7/2017 12:14 PM	
Client ID:			Run ID: VMS5_171106A			SeqNo: 4745012		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Tetrachloroethene	43.09	0.91	40	0	108	68-166	43.42	0.763	30	
Surr: 1,2-Dichloroethane-d4	20.78	0	20	0	104	75-120	20.93	0.719	30	
Surr: 4-Bromofluorobenzene	20.82	0	20	0	104	80-110	20.92	0.479	30	
Surr: Dibromofluoromethane	19.81	0	20	0	99	85-115	20.05	1.2	30	
Surr: Toluene-d8	19.83	0	20	0	99.2	85-110	20.33	2.49	30	

The following samples were analyzed in this batch:

17101814-06A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Cincinnati, OH
+1 513 733 5336

Everett, WA
+1 425 356 2600

Fort Collins, CO
+1 970 490 1511

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page 1 of 1

COC ID: 46247

Houston, TX
+1 281 530 5656

Middletown, PA
+1 717 944 5541

Spring City, PA
+1 610 948 4903

Salt Lake City, UT
+1 801 266 7700

South Charleston, WV
+1 304 356 3168

York, PA
+1 717 505 5280

ALS Project Manager:

ALS Work Order #: 17101814

Customer Information		Project Information		Parameter/Method Request for Analysis												
Purchase Order		Project Name	SITE ID: 12.57/12.58	A	VOLs											
Work Order		Project Number	21-413458	B												
Company Name	Ramboll Environ US Corporation	Bill To Company	Ramboll Environ US Corporation	C												
Send Report To	Donna Volk	Invoice Attn	Accounts Payable	D												
Address	175 N Corporate Drive Suite 160	Address	175 N Corporate Drive Suite 160	E												
City/State/Zip	Brookfield, WI 53045	City/State/Zip	Brookfield, WI 53045	F												
Phone	(262) 901-0089	Phone	(262) 901-0089	G												
Fax	(262) 901-0079	Fax	(262) 901-0079	H												
e-Mail Address	dvolk@ramboll.com	e-Mail Address	dvolk@ramboll.com	I												
				J												

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	LG-B-1	10/25/16	1120	GW	HCl	3	X										
2	LG-B-2		1205				X										
3	LG-B-3		1235				X										
4	LG-B-4		1259				X										
5	LG-B-5		1340				X										
6	LG-B-6		1415				X										
7	LG-B-7		1447				X										
8	TRIP BLANK					1	X										
9	TEMP BLANK					1											
10																	

Sampler(s) Please Print & Sign Tyler Burgett Tyler Burgett		Shipment Method Fedex ON		Turnaround Time in Business Days (BD) <input checked="" type="checkbox"/> 10 BD <input type="checkbox"/> 5 BD <input type="checkbox"/> 3 BD <input type="checkbox"/> 2 BD <input type="checkbox"/> 1 BD				Results Due Date:			
Relinquished by: Tyler Burgett	Date: 10/26/17	Time: 1800	Received by: FedEx	Notes:							
Relinquished by: FedEx	Date: 10/27/17	Time: 0930	Received by (Laboratory): [Signature]	Cooler ID SR2	Cooler Temp 28°C	QC Package: (Check One Box Below)					
Logged by (Laboratory): Kc	Date: 10/27/17	Time: 1055	Checked by (Laboratory): [Signature]			<input type="checkbox"/> Level II Std QC <input type="checkbox"/> TRRP Checklist <input type="checkbox"/> Level III Std QC/Raw Data <input type="checkbox"/> TRRP Level IV <input type="checkbox"/> Level IV SW846/CLP <input type="checkbox"/> Other					
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₃ 6-NaHSO ₄ 7-Other 8-4°C 9-5035											

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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Sample Receipt Checklist

Client Name: **ENVIRONINT - WI**

Date/Time Received: **27-Oct-17 09:30**

Work Order: **17101814**

Received by: **KRW**

Checklist completed by Keith Wurenga
eSignature

27-Oct-17
Date

Reviewed by: Chad Whelton
eSignature

30-Oct-17
Date

Matrices: **Water**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>2.8/2.8 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>10/27/2017 10:57:04 AM</u>		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

May 01, 2018

Donna Volk
Ramboll Environ
175 N. Corporate Dr.
Suite 160
Brookfield, WI 53045

RE: Project: 1690004946 WWV-SITE12.57/12.58
Pace Project No.: 40167855

Dear Donna Volk:

Enclosed are the analytical results for sample(s) received by the laboratory on April 21, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Steven Mleczko
steve.mleczko@pacelabs.com
(920)469-2436
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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CERTIFICATIONS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40167855001	LG-B-13 (2.5-3.5')	Solid	04/19/18 08:30	04/21/18 10:20
40167855002	LG-B-12 (5-6')	Solid	04/19/18 09:45	04/21/18 10:20
40167855003	LG-B-12 (9-10')	Solid	04/19/18 09:55	04/21/18 10:20
40167855004	LG-B-11 (4-5')	Solid	04/19/18 10:15	04/21/18 10:20
40167855005	LG-B-11 (9-10')	Solid	04/19/18 10:20	04/21/18 10:20
40167855006	LG-B-10 (4-5')	Solid	04/19/18 10:45	04/21/18 10:20
40167855007	LG-B-10 (11-12')	Solid	04/19/18 11:00	04/21/18 10:20
40167855008	LG-B-9 (5-6')	Solid	04/19/18 11:20	04/21/18 10:20
40167855009	LG-B-9 (10-11')	Solid	04/19/18 11:25	04/21/18 10:20
40167855010	LG-B-8 (3-4')	Solid	04/19/18 12:00	04/21/18 10:20
40167855011	TRIP BLANK	Solid	04/19/18 00:00	04/21/18 10:20

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SAMPLE ANALYTE COUNT

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40167855001	LG-B-13 (2.5-3.5')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40167855002	LG-B-12 (5-6')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40167855003	LG-B-12 (9-10')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40167855004	LG-B-11 (4-5')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40167855005	LG-B-11 (9-10')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40167855006	LG-B-10 (4-5')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40167855007	LG-B-10 (11-12')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40167855008	LG-B-9 (5-6')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40167855009	LG-B-9 (10-11')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40167855010	LG-B-8 (3-4')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40167855011	TRIP BLANK	EPA 8260	SMT	65

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40167855001	LG-B-13 (2.5-3.5')					
ASTM D2974-87	Percent Moisture	20.8	%	0.10	04/30/18 14:17	
40167855002	LG-B-12 (5-6')					
EPA 8260	Tetrachloroethene	42.8J	ug/kg	72.6	04/25/18 22:02	
ASTM D2974-87	Percent Moisture	17.3	%	0.10	04/30/18 14:17	
40167855003	LG-B-12 (9-10')					
EPA 8260	Tetrachloroethene	88.6	ug/kg	62.8	04/25/18 22:25	
ASTM D2974-87	Percent Moisture	4.5	%	0.10	04/30/18 14:17	
40167855004	LG-B-11 (4-5')					
ASTM D2974-87	Percent Moisture	21.2	%	0.10	04/30/18 14:17	
40167855005	LG-B-11 (9-10')					
EPA 8260	Tetrachloroethene	117	ug/kg	63.8	04/25/18 18:34	
ASTM D2974-87	Percent Moisture	5.9	%	0.10	04/30/18 15:44	
40167855006	LG-B-10 (4-5')					
ASTM D2974-87	Percent Moisture	15.2	%	0.10	04/30/18 15:44	
40167855007	LG-B-10 (11-12')					
EPA 8260	Tetrachloroethene	934	ug/kg	76.0	04/25/18 13:50	
ASTM D2974-87	Percent Moisture	21.0	%	0.10	04/30/18 15:45	
40167855008	LG-B-9 (5-6')					
EPA 8260	Tetrachloroethene	140	ug/kg	70.5	04/25/18 19:20	
ASTM D2974-87	Percent Moisture	15.0	%	0.10	04/30/18 15:45	
40167855009	LG-B-9 (10-11')					
EPA 8260	Tetrachloroethene	557	ug/kg	63.1	04/25/18 19:43	
ASTM D2974-87	Percent Moisture	4.9	%	0.10	04/30/18 15:45	
40167855010	LG-B-8 (3-4')					
ASTM D2974-87	Percent Moisture	6.7	%	0.10	04/30/18 15:45	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-13 (2.5-3.5') Lab ID: 40167855001 Collected: 04/19/18 08:30 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	04/25/18 08:00	04/25/18 14:13	120-82-1	L2,W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	04/25/18 08:00	04/25/18 14:13	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	04/25/18 08:00	04/25/18 14:13	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	04/25/18 08:00	04/25/18 14:13	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	04/25/18 08:00	04/25/18 14:13	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	04/25/18 08:00	04/25/18 14:13	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-13 (2.5-3.5') **Lab ID:** 40167855001 **Collected:** 04/19/18 08:30 **Received:** 04/21/18 10:20 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	04/25/18 08:00	04/25/18 14:13	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	04/25/18 08:00	04/25/18 14:13	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 14:13	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	82	%	68-130		1	04/25/18 08:00	04/25/18 14:13	1868-53-7	
Toluene-d8 (S)	78	%	68-149		1	04/25/18 08:00	04/25/18 14:13	2037-26-5	
4-Bromofluorobenzene (S)	70	%	58-141		1	04/25/18 08:00	04/25/18 14:13	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	20.8	%	0.10	0.10	1		04/30/18 14:17		

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-12 (5-6') Lab ID: 40167855002 Collected: 04/19/18 09:45 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	04/25/18 08:00	04/25/18 22:02	120-82-1	L2,W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	04/25/18 08:00	04/25/18 22:02	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	04/25/18 08:00	04/25/18 22:02	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	04/25/18 08:00	04/25/18 22:02	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	04/25/18 08:00	04/25/18 22:02	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	04/25/18 08:00	04/25/18 22:02	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	100-42-5	W

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-12 (5-6') Lab ID: 40167855002 Collected: 04/19/18 09:45 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	42.8J	ug/kg	72.6	30.2	1	04/25/18 08:00	04/25/18 22:02	127-18-4	
Toluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	04/25/18 08:00	04/25/18 22:02	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	04/25/18 08:00	04/25/18 22:02	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:02	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	83	%	68-130		1	04/25/18 08:00	04/25/18 22:02	1868-53-7	
Toluene-d8 (S)	83	%	68-149		1	04/25/18 08:00	04/25/18 22:02	2037-26-5	
4-Bromofluorobenzene (S)	72	%	58-141		1	04/25/18 08:00	04/25/18 22:02	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	17.3	%	0.10	0.10	1		04/30/18 14:17		

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-12 (9-10') Lab ID: 40167855003 Collected: 04/19/18 09:55 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	04/25/18 08:00	04/25/18 22:25	120-82-1	L2,W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	04/25/18 08:00	04/25/18 22:25	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	04/25/18 08:00	04/25/18 22:25	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	04/25/18 08:00	04/25/18 22:25	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	04/25/18 08:00	04/25/18 22:25	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	04/25/18 08:00	04/25/18 22:25	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-12 (9-10') **Lab ID:** 40167855003 **Collected:** 04/19/18 09:55 **Received:** 04/21/18 10:20 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	88.6	ug/kg	62.8	26.2	1	04/25/18 08:00	04/25/18 22:25	127-18-4	
Toluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	04/25/18 08:00	04/25/18 22:25	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	04/25/18 08:00	04/25/18 22:25	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 22:25	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	91	%	68-130		1	04/25/18 08:00	04/25/18 22:25	1868-53-7	
Toluene-d8 (S)	82	%	68-149		1	04/25/18 08:00	04/25/18 22:25	2037-26-5	
4-Bromofluorobenzene (S)	74	%	58-141		1	04/25/18 08:00	04/25/18 22:25	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	4.5	%	0.10	0.10	1		04/30/18 14:17		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-11 (4-5) **Lab ID: 40167855004** Collected: 04/19/18 10:15 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	04/25/18 08:00	04/25/18 15:22	120-82-1	L2,W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	04/25/18 08:00	04/25/18 15:22	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	04/25/18 08:00	04/25/18 15:22	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	04/25/18 08:00	04/25/18 15:22	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	04/25/18 08:00	04/25/18 15:22	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	04/25/18 08:00	04/25/18 15:22	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	100-42-5	W

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-11 (4-5) **Lab ID: 40167855004** Collected: 04/19/18 10:15 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	04/25/18 08:00	04/25/18 15:22	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	04/25/18 08:00	04/25/18 15:22	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 15:22	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	85	%	68-130		1	04/25/18 08:00	04/25/18 15:22	1868-53-7	
Toluene-d8 (S)	83	%	68-149		1	04/25/18 08:00	04/25/18 15:22	2037-26-5	
4-Bromofluorobenzene (S)	71	%	58-141		1	04/25/18 08:00	04/25/18 15:22	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	21.2	%	0.10	0.10	1		04/30/18 14:17		

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-11 (9-10') Lab ID: 40167855005 Collected: 04/19/18 10:20 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	04/25/18 08:00	04/25/18 18:34	120-82-1	L2,W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	04/25/18 08:00	04/25/18 18:34	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	04/25/18 08:00	04/25/18 18:34	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	04/25/18 08:00	04/25/18 18:34	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	04/25/18 08:00	04/25/18 18:34	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	04/25/18 08:00	04/25/18 18:34	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-11 (9-10') **Lab ID: 40167855005** Collected: 04/19/18 10:20 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	117	ug/kg	63.8	26.6	1	04/25/18 08:00	04/25/18 18:34	127-18-4	
Toluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	04/25/18 08:00	04/25/18 18:34	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	04/25/18 08:00	04/25/18 18:34	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:34	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	91	%	68-130		1	04/25/18 08:00	04/25/18 18:34	1868-53-7	
Toluene-d8 (S)	89	%	68-149		1	04/25/18 08:00	04/25/18 18:34	2037-26-5	
4-Bromofluorobenzene (S)	78	%	58-141		1	04/25/18 08:00	04/25/18 18:34	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	5.9	%	0.10	0.10	1		04/30/18 15:44		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-10 (4-5') Lab ID: 40167855006 Collected: 04/19/18 10:45 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	04/25/18 08:00	04/25/18 18:57	120-82-1	L2,W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	04/25/18 08:00	04/25/18 18:57	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	04/25/18 08:00	04/25/18 18:57	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	04/25/18 08:00	04/25/18 18:57	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	04/25/18 08:00	04/25/18 18:57	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	04/25/18 08:00	04/25/18 18:57	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-10 (4-5') Lab ID: 40167855006 Collected: 04/19/18 10:45 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	04/25/18 08:00	04/25/18 18:57	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	04/25/18 08:00	04/25/18 18:57	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 18:57	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	91	%	68-130		1	04/25/18 08:00	04/25/18 18:57	1868-53-7	
Toluene-d8 (S)	86	%	68-149		1	04/25/18 08:00	04/25/18 18:57	2037-26-5	
4-Bromofluorobenzene (S)	76	%	58-141		1	04/25/18 08:00	04/25/18 18:57	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	15.2	%	0.10	0.10	1		04/30/18 15:44		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-10 (11-12') Lab ID: 40167855007 Collected: 04/19/18 11:00 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	75-35-4	M1,W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	04/25/18 08:00	04/25/18 13:50	120-82-1	L2,W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	04/25/18 08:00	04/25/18 13:50	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	04/25/18 08:00	04/25/18 13:50	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	04/25/18 08:00	04/25/18 13:50	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	04/25/18 08:00	04/25/18 13:50	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	04/25/18 08:00	04/25/18 13:50	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-10 (11-12') **Lab ID:** 40167855007 **Collected:** 04/19/18 11:00 **Received:** 04/21/18 10:20 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	934	ug/kg	76.0	31.7	1	04/25/18 08:00	04/25/18 13:50	127-18-4	
Toluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	04/25/18 08:00	04/25/18 13:50	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	04/25/18 08:00	04/25/18 13:50	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:50	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	92	%	68-130		1	04/25/18 08:00	04/25/18 13:50	1868-53-7	
Toluene-d8 (S)	84	%	68-149		1	04/25/18 08:00	04/25/18 13:50	2037-26-5	
4-Bromofluorobenzene (S)	75	%	58-141		1	04/25/18 08:00	04/25/18 13:50	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	21.0	%	0.10	0.10	1		04/30/18 15:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-9 (5-6') Lab ID: 40167855008 Collected: 04/19/18 11:20 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	04/25/18 08:00	04/25/18 19:20	120-82-1	L2,W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	04/25/18 08:00	04/25/18 19:20	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	04/25/18 08:00	04/25/18 19:20	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	04/25/18 08:00	04/25/18 19:20	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	04/25/18 08:00	04/25/18 19:20	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	04/25/18 08:00	04/25/18 19:20	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-9 (5-6') **Lab ID: 40167855008** Collected: 04/19/18 11:20 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	140	ug/kg	70.5	29.4	1	04/25/18 08:00	04/25/18 19:20	127-18-4	
Toluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	04/25/18 08:00	04/25/18 19:20	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	04/25/18 08:00	04/25/18 19:20	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:20	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	89	%	68-130		1	04/25/18 08:00	04/25/18 19:20	1868-53-7	
Toluene-d8 (S)	89	%	68-149		1	04/25/18 08:00	04/25/18 19:20	2037-26-5	
4-Bromofluorobenzene (S)	78	%	58-141		1	04/25/18 08:00	04/25/18 19:20	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	15.0	%	0.10	0.10	1		04/30/18 15:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-9 (10-11') Lab ID: 40167855009 Collected: 04/19/18 11:25 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	04/25/18 08:00	04/25/18 19:43	120-82-1	L2,W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	04/25/18 08:00	04/25/18 19:43	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	04/25/18 08:00	04/25/18 19:43	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	04/25/18 08:00	04/25/18 19:43	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	04/25/18 08:00	04/25/18 19:43	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	04/25/18 08:00	04/25/18 19:43	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	100-42-5	W

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-9 (10-11') **Lab ID:** 40167855009 **Collected:** 04/19/18 11:25 **Received:** 04/21/18 10:20 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	557	ug/kg	63.1	26.3	1	04/25/18 08:00	04/25/18 19:43	127-18-4	
Toluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	04/25/18 08:00	04/25/18 19:43	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	04/25/18 08:00	04/25/18 19:43	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 19:43	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	89	%	68-130		1	04/25/18 08:00	04/25/18 19:43	1868-53-7	
Toluene-d8 (S)	82	%	68-149		1	04/25/18 08:00	04/25/18 19:43	2037-26-5	
4-Bromofluorobenzene (S)	73	%	58-141		1	04/25/18 08:00	04/25/18 19:43	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	4.9	%	0.10	0.10	1		04/30/18 15:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-8 (3-4') Lab ID: 40167855010 Collected: 04/19/18 12:00 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	04/25/18 08:00	04/25/18 20:07	120-82-1	L2,W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	04/25/18 08:00	04/25/18 20:07	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	04/25/18 08:00	04/25/18 20:07	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	04/25/18 08:00	04/25/18 20:07	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	04/25/18 08:00	04/25/18 20:07	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	04/25/18 08:00	04/25/18 20:07	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: LG-B-8 (3-4') Lab ID: 40167855010 Collected: 04/19/18 12:00 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	04/25/18 08:00	04/25/18 20:07	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	04/25/18 08:00	04/25/18 20:07	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 20:07	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	92	%	68-130		1	04/25/18 08:00	04/25/18 20:07	1868-53-7	
Toluene-d8 (S)	89	%	68-149		1	04/25/18 08:00	04/25/18 20:07	2037-26-5	
4-Bromofluorobenzene (S)	78	%	58-141		1	04/25/18 08:00	04/25/18 20:07	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	6.7	%	0.10	0.10	1		04/30/18 15:45		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: TRIP BLANK Lab ID: 40167855011 Collected: 04/19/18 00:00 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	04/25/18 08:00	04/25/18 13:27	120-82-1	L2,W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	04/25/18 08:00	04/25/18 13:27	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	04/25/18 08:00	04/25/18 13:27	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	04/25/18 08:00	04/25/18 13:27	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	04/25/18 08:00	04/25/18 13:27	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	04/25/18 08:00	04/25/18 13:27	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Sample: TRIP BLANK **Lab ID: 40167855011** Collected: 04/19/18 00:00 Received: 04/21/18 10:20 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	04/25/18 08:00	04/25/18 13:27	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	04/25/18 08:00	04/25/18 13:27	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	04/25/18 08:00	04/25/18 13:27	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	88	%	68-130		1	04/25/18 08:00	04/25/18 13:27	1868-53-7	
Toluene-d8 (S)	87	%	68-149		1	04/25/18 08:00	04/25/18 13:27	2037-26-5	
4-Bromofluorobenzene (S)	78	%	58-141		1	04/25/18 08:00	04/25/18 13:27	460-00-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

QC Batch:	286968	Analysis Method:	EPA 8260
QC Batch Method:	EPA 5035/5030B	Analysis Description:	8260 MSV Med Level Normal List
Associated Lab Samples:	40167855001, 40167855002, 40167855003, 40167855004, 40167855005, 40167855006, 40167855007, 40167855008, 40167855009, 40167855010, 40167855011		

METHOD BLANK:	1678538	Matrix:	Solid
Associated Lab Samples:	40167855001, 40167855002, 40167855003, 40167855004, 40167855005, 40167855006, 40167855007, 40167855008, 40167855009, 40167855010, 40167855011		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	<13.7	50.0	04/25/18 09:12	
1,1,1-Trichloroethane	ug/kg	<14.4	50.0	04/25/18 09:12	
1,1,2,2-Tetrachloroethane	ug/kg	<17.5	50.0	04/25/18 09:12	
1,1,2-Trichloroethane	ug/kg	<20.2	50.0	04/25/18 09:12	
1,1-Dichloroethane	ug/kg	<17.6	50.0	04/25/18 09:12	
1,1-Dichloroethene	ug/kg	<17.6	50.0	04/25/18 09:12	
1,1-Dichloropropene	ug/kg	<14.0	50.0	04/25/18 09:12	
1,2,3-Trichlorobenzene	ug/kg	<17.0	50.0	04/25/18 09:12	
1,2,3-Trichloropropane	ug/kg	<22.3	50.0	04/25/18 09:12	
1,2,4-Trichlorobenzene	ug/kg	<47.6	250	04/25/18 09:12	
1,2,4-Trimethylbenzene	ug/kg	<12.2	50.0	04/25/18 09:12	
1,2-Dibromo-3-chloropropane	ug/kg	<91.2	250	04/25/18 09:12	
1,2-Dibromoethane (EDB)	ug/kg	<14.7	50.0	04/25/18 09:12	
1,2-Dichlorobenzene	ug/kg	<16.2	50.0	04/25/18 09:12	
1,2-Dichloroethane	ug/kg	<15.0	50.0	04/25/18 09:12	
1,2-Dichloropropane	ug/kg	<16.8	50.0	04/25/18 09:12	
1,3,5-Trimethylbenzene	ug/kg	<14.5	50.0	04/25/18 09:12	
1,3-Dichlorobenzene	ug/kg	<13.2	50.0	04/25/18 09:12	
1,3-Dichloropropane	ug/kg	<12.0	50.0	04/25/18 09:12	
1,4-Dichlorobenzene	ug/kg	<15.9	50.0	04/25/18 09:12	
2,2-Dichloropropane	ug/kg	<12.6	50.0	04/25/18 09:12	
2-Chlorotoluene	ug/kg	<15.8	50.0	04/25/18 09:12	
4-Chlorotoluene	ug/kg	<13.0	50.0	04/25/18 09:12	
Benzene	ug/kg	<9.2	20.0	04/25/18 09:12	
Bromobenzene	ug/kg	<20.6	50.0	04/25/18 09:12	
Bromochloromethane	ug/kg	<21.4	50.0	04/25/18 09:12	
Bromodichloromethane	ug/kg	<9.8	50.0	04/25/18 09:12	
Bromoform	ug/kg	<19.8	50.0	04/25/18 09:12	
Bromomethane	ug/kg	<69.9	250	04/25/18 09:12	
Carbon tetrachloride	ug/kg	<12.1	50.0	04/25/18 09:12	
Chlorobenzene	ug/kg	<14.8	50.0	04/25/18 09:12	
Chloroethane	ug/kg	<67.0	250	04/25/18 09:12	
Chloroform	ug/kg	<46.4	250	04/25/18 09:12	
Chloromethane	ug/kg	<20.4	50.0	04/25/18 09:12	
cis-1,2-Dichloroethene	ug/kg	<16.6	50.0	04/25/18 09:12	
cis-1,3-Dichloropropene	ug/kg	<16.6	50.0	04/25/18 09:12	
Dibromochloromethane	ug/kg	<17.9	50.0	04/25/18 09:12	
Dibromomethane	ug/kg	<19.3	50.0	04/25/18 09:12	
Dichlorodifluoromethane	ug/kg	<12.3	50.0	04/25/18 09:12	
Diisopropyl ether	ug/kg	<17.7	50.0	04/25/18 09:12	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

METHOD BLANK: 1678538

Matrix: Solid

Associated Lab Samples: 40167855001, 40167855002, 40167855003, 40167855004, 40167855005, 40167855006, 40167855007, 40167855008, 40167855009, 40167855010, 40167855011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Ethylbenzene	ug/kg	<12.4	50.0	04/25/18 09:12	
Hexachloro-1,3-butadiene	ug/kg	<24.5	50.0	04/25/18 09:12	
Isopropylbenzene (Cumene)	ug/kg	<12.6	50.0	04/25/18 09:12	
m&p-Xylene	ug/kg	<34.4	100	04/25/18 09:12	
Methyl-tert-butyl ether	ug/kg	<12.7	50.0	04/25/18 09:12	
Methylene Chloride	ug/kg	<16.2	50.0	04/25/18 09:12	
n-Butylbenzene	ug/kg	<10.5	50.0	04/25/18 09:12	
n-Propylbenzene	ug/kg	<11.6	50.0	04/25/18 09:12	
Naphthalene	ug/kg	<40.0	250	04/25/18 09:12	
o-Xylene	ug/kg	<14.0	50.0	04/25/18 09:12	
p-Isopropyltoluene	ug/kg	<12.0	50.0	04/25/18 09:12	
sec-Butylbenzene	ug/kg	<11.9	50.0	04/25/18 09:12	
Styrene	ug/kg	<9.0	50.0	04/25/18 09:12	
tert-Butylbenzene	ug/kg	<9.5	50.0	04/25/18 09:12	
Tetrachloroethene	ug/kg	<12.9	50.0	04/25/18 09:12	
Toluene	ug/kg	<11.2	50.0	04/25/18 09:12	
trans-1,2-Dichloroethene	ug/kg	<16.5	50.0	04/25/18 09:12	
trans-1,3-Dichloropropene	ug/kg	<14.4	50.0	04/25/18 09:12	
Trichloroethene	ug/kg	<23.6	50.0	04/25/18 09:12	
Trichlorofluoromethane	ug/kg	<24.7	50.0	04/25/18 09:12	
Vinyl chloride	ug/kg	<21.1	50.0	04/25/18 09:12	
Xylene (Total)	ug/kg	<48.4	150	04/25/18 09:12	
4-Bromofluorobenzene (S)	%	78	58-141	04/25/18 09:12	
Dibromofluoromethane (S)	%	89	68-130	04/25/18 09:12	
Toluene-d8 (S)	%	87	68-149	04/25/18 09:12	

LABORATORY CONTROL SAMPLE: 1679074

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/kg	2500	2390	95	61-122	
1,1,2,2-Tetrachloroethane	ug/kg	2500	2370	95	73-130	
1,1,2-Trichloroethane	ug/kg	2500	2360	94	70-130	
1,1-Dichloroethane	ug/kg	2500	2440	98	63-124	
1,1-Dichloroethene	ug/kg	2500	2390	96	53-117	
1,2,4-Trichlorobenzene	ug/kg	2500	1780	71	78-130	L2
1,2-Dibromo-3-chloropropane	ug/kg	2500	1920	77	49-140	
1,2-Dibromoethane (EDB)	ug/kg	2500	2390	96	70-130	
1,2-Dichlorobenzene	ug/kg	2500	2250	90	70-130	
1,2-Dichloroethane	ug/kg	2500	2270	91	56-135	
1,2-Dichloropropane	ug/kg	2500	2310	93	77-122	
1,3-Dichlorobenzene	ug/kg	2500	2160	86	70-130	
1,4-Dichlorobenzene	ug/kg	2500	2300	92	70-130	
Benzene	ug/kg	2500	2310	92	66-130	

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

LABORATORY CONTROL SAMPLE: 1679074

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromodichloromethane	ug/kg	2500	2340	94	62-135	
Bromoform	ug/kg	2500	2110	84	68-130	
Bromomethane	ug/kg	2500	2440	98	29-137	
Carbon tetrachloride	ug/kg	2500	2420	97	57-130	
Chlorobenzene	ug/kg	2500	2360	95	70-130	
Chloroethane	ug/kg	2500	2630	105	36-144	
Chloroform	ug/kg	2500	2330	93	69-115	
Chloromethane	ug/kg	2500	2340	93	32-126	
cis-1,2-Dichloroethene	ug/kg	2500	2260	90	65-130	
cis-1,3-Dichloropropene	ug/kg	2500	2380	95	70-130	
Dibromochloromethane	ug/kg	2500	2190	88	70-130	
Dichlorodifluoromethane	ug/kg	2500	2030	81	10-99	
Ethylbenzene	ug/kg	2500	2270	91	82-122	
Isopropylbenzene (Cumene)	ug/kg	2500	2240	89	70-130	
m&p-Xylene	ug/kg	5000	4550	91	70-130	
Methyl-tert-butyl ether	ug/kg	2500	2210	89	63-134	
Methylene Chloride	ug/kg	2500	2330	93	56-123	
o-Xylene	ug/kg	2500	2340	94	70-130	
Styrene	ug/kg	2500	2370	95	70-130	
Tetrachloroethene	ug/kg	2500	2310	93	70-131	
Toluene	ug/kg	2500	2290	92	80-120	
trans-1,2-Dichloroethene	ug/kg	2500	2390	96	66-130	
trans-1,3-Dichloropropene	ug/kg	2500	2310	92	68-130	
Trichloroethene	ug/kg	2500	2250	90	70-130	
Trichlorofluoromethane	ug/kg	2500	2490	100	37-149	
Vinyl chloride	ug/kg	2500	2400	96	43-128	
Xylene (Total)	ug/kg	7500	6890	92	70-130	
4-Bromofluorobenzene (S)	%			75	58-141	
Dibromofluoromethane (S)	%			89	68-130	
Toluene-d8 (S)	%			80	68-149	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1678540 1678541

Parameter	Units	40167855007		MSD		MSD		MS % Rec	MSD % Rec	% Rec Limits	Max		Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	Result				RPD	RPD	
1,1,1-Trichloroethane	ug/kg	<25.0	1580	1580	1770	1800	112	114	57-123	2	20		
1,1,2,2-Tetrachloroethane	ug/kg	<25.0	1580	1580	1780	1820	112	115	73-135	2	20		
1,1,2-Trichloroethane	ug/kg	<25.0	1580	1580	1640	1720	104	109	70-130	4	20		
1,1-Dichloroethane	ug/kg	<25.0	1580	1580	1900	1950	120	123	63-124	2	20		
1,1-Dichloroethene	ug/kg	<25.0	1580	1580	1860	1860	118	118	48-117	0	23	M1	
1,2,4-Trichlorobenzene	ug/kg	<47.6	1580	1580	1410	1480	89	94	78-145	5	20		
1,2-Dibromo-3-chloropropane	ug/kg	<91.2	1580	1580	1540	1500	98	95	38-168	3	22		
1,2-Dibromoethane (EDB)	ug/kg	<25.0	1580	1580	1720	1720	108	109	70-130	0	20		
1,2-Dichlorobenzene	ug/kg	<25.0	1580	1580	1760	1860	111	117	70-130	5	20		

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1678540 1678541											
Parameter	Units	40167855007		MS		MSD		MS		MSD	
		Result	Conc.	Spike	Conc.	Spike	Conc.	Result	Conc.	% Rec	Max
										Limits	RPD
1,2-Dichloroethane	ug/kg	<25.0	1580	1580	1580	1580	1580	1810	1820	114	115
1,2-Dichloropropane	ug/kg	<25.0	1580	1580	1580	1580	1580	1790	1820	113	115
1,3-Dichlorobenzene	ug/kg	<25.0	1580	1580	1580	1580	1580	1680	1730	106	109
1,4-Dichlorobenzene	ug/kg	<25.0	1580	1580	1580	1580	1580	1810	1820	115	115
Benzene	ug/kg	<25.0	1580	1580	1580	1580	1580	1730	1770	110	112
Bromodichloromethane	ug/kg	<25.0	1580	1580	1580	1580	1580	1730	1810	109	115
Bromoform	ug/kg	<25.0	1580	1580	1580	1580	1580	1590	1610	101	102
Bromomethane	ug/kg	<69.9	1580	1580	1580	1580	1580	1800	1820	114	115
Carbon tetrachloride	ug/kg	<25.0	1580	1580	1580	1580	1580	1820	1900	115	120
Chlorobenzene	ug/kg	<25.0	1580	1580	1580	1580	1580	1740	1790	110	113
Chloroethane	ug/kg	<67.0	1580	1580	1580	1580	1580	1940	1930	122	122
Chloroform	ug/kg	<46.4	1580	1580	1580	1580	1580	1780	1750	112	111
Chloromethane	ug/kg	<25.0	1580	1580	1580	1580	1580	1520	1540	96	97
cis-1,2-Dichloroethene	ug/kg	<25.0	1580	1580	1580	1580	1580	1700	1750	107	111
cis-1,3-Dichloropropene	ug/kg	<25.0	1580	1580	1580	1580	1580	1700	1780	108	113
Dibromochloromethane	ug/kg	<25.0	1580	1580	1580	1580	1580	1640	1730	104	110
Dichlorodifluoromethane	ug/kg	<25.0	1580	1580	1580	1580	1580	1040	1050	66	66
Ethylbenzene	ug/kg	<25.0	1580	1580	1580	1580	1580	1650	1730	104	109
Isopropylbenzene (Cumene)	ug/kg	<25.0	1580	1580	1580	1580	1580	1650	1750	104	110
m&p-Xylene	ug/kg	<50.0	3170	3170	3170	3170	3170	3410	3460	108	109
Methyl-tert-butyl ether	ug/kg	<25.0	1580	1580	1580	1580	1580	1650	1650	104	105
Methylene Chloride	ug/kg	<25.0	1580	1580	1580	1580	1580	1840	1880	117	119
o-Xylene	ug/kg	<25.0	1580	1580	1580	1580	1580	1710	1720	108	109
Styrene	ug/kg	<25.0	1580	1580	1580	1580	1580	1720	1800	109	114
Tetrachloroethene	ug/kg	934	1580	1580	1580	1580	1580	2590	2770	105	116
Toluene	ug/kg	<25.0	1580	1580	1580	1580	1580	1670	1740	105	110
trans-1,2-Dichloroethene	ug/kg	<25.0	1580	1580	1580	1580	1580	1810	1850	114	117
trans-1,3-Dichloropropene	ug/kg	<25.0	1580	1580	1580	1580	1580	1680	1770	106	112
Trichloroethene	ug/kg	<25.0	1580	1580	1580	1580	1580	1680	1710	106	108
Trichlorofluoromethane	ug/kg	<25.0	1580	1580	1580	1580	1580	1790	1910	113	121
Vinyl chloride	ug/kg	<25.0	1580	1580	1580	1580	1580	1580	1680	100	106
Xylene (Total)	ug/kg	<75.0	4750	4750	4750	4750	4750	5110	5180	108	109
4-Bromofluorobenzene (S)	%									81	81
Dibromofluoromethane (S)	%									96	95
Toluene-d8 (S)	%									84	87

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

QC Batch:	287434	Analysis Method:	ASTM D2974-87
QC Batch Method:	ASTM D2974-87	Analysis Description:	Dry Weight/Percent Moisture
Associated Lab Samples: 40167855001, 40167855002, 40167855003, 40167855004			

SAMPLE DUPLICATE: 1681713

Parameter	Units	40167855004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	21.2	20.9	1	10	

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

QC Batch:	287438	Analysis Method:	ASTM D2974-87
QC Batch Method:	ASTM D2974-87	Analysis Description:	Dry Weight/Percent Moisture
Associated Lab Samples:	40167855005, 40167855006, 40167855007, 40167855008, 40167855009, 40167855010		

SAMPLE DUPLICATE: 1681747

Parameter	Units	40167889001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.7	18.8	1	10	

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QUALIFIERS

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

L2 Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results may be biased low.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

W Non-detect results are reported on a wet weight basis.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1690004946 WWV-SITE12.57/12.58

Pace Project No.: 40167855

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40167855001	LG-B-13 (2.5-3.5')	EPA 5035/5030B	286968	EPA 8260	286969
40167855002	LG-B-12 (5-6')	EPA 5035/5030B	286968	EPA 8260	286969
40167855003	LG-B-12 (9-10')	EPA 5035/5030B	286968	EPA 8260	286969
40167855004	LG-B-11 (4-5')	EPA 5035/5030B	286968	EPA 8260	286969
40167855005	LG-B-11 (9-10')	EPA 5035/5030B	286968	EPA 8260	286969
40167855006	LG-B-10 (4-5')	EPA 5035/5030B	286968	EPA 8260	286969
40167855007	LG-B-10 (11-12')	EPA 5035/5030B	286968	EPA 8260	286969
40167855008	LG-B-9 (5-6')	EPA 5035/5030B	286968	EPA 8260	286969
40167855009	LG-B-9 (10-11')	EPA 5035/5030B	286968	EPA 8260	286969
40167855010	LG-B-8 (3-4')	EPA 5035/5030B	286968	EPA 8260	286969
40167855011	TRIP BLANK	EPA 5035/5030B	286968	EPA 8260	286969
40167855001	LG-B-13 (2.5-3.5')	ASTM D2974-87	287434		
40167855002	LG-B-12 (5-6')	ASTM D2974-87	287434		
40167855003	LG-B-12 (9-10')	ASTM D2974-87	287434		
40167855004	LG-B-11 (4-5')	ASTM D2974-87	287434		
40167855005	LG-B-11 (9-10')	ASTM D2974-87	287438		
40167855006	LG-B-10 (4-5')	ASTM D2974-87	287438		
40167855007	LG-B-10 (11-12')	ASTM D2974-87	287438		
40167855008	LG-B-9 (5-6')	ASTM D2974-87	287438		
40167855009	LG-B-9 (10-11')	ASTM D2974-87	287438		
40167855010	LG-B-8 (3-4')	ASTM D2974-87	287438		

REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: **Ramboll**

Branch/Location: **Brockfield, VT**

Project Contact: **Doreen Volk**

Phone: **802-901-3504**

Project Number: **106000-49416**

Project Name: **WIND-SITE A.5.11A.58**

Project State: **VT**

Sampled By (Print): **Tyler Burgett**

Sampled By (Sign): **Tyler Burgett**

PO #:

Regulatory Program:

Data Package Options (billable)

☐ EPA Level III

☐ EPA Level IV

☐ On your sample (billable)

☐ NOT needed on your sample

Matrix Codes

A = Air

B = Biota

C = Charcoal

D = Oil

E = Soil

F = Sludge

W = Water

DW = Drinking Water

GW = Ground Water

SW = Surface Water

WW = Waste Water

WP = Wipe

DATE

TIME

MATRIX

Analyses Requested

Y/N

Pick Later

CHAIN OF CUSTODY

Face Analytical

www.faceanals.com

A=None B=HCL C=H2SO4 D=HNO3 E=D1 Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

UPPER MIDWEST REGION

MN: 612-607-1700 WI: 920-469-2436

Page 1 of 2

Page 36 of 39

Quote #:

Mail To Contact:

Mail To Company:

Mail To Address:

Invoice To Contact:

Invoice To Company:

Invoice To Address:

Invoice To Phone:

CLIENT COMMENTS

LAB COMMENTS (Lab Use Only)

Profile #

Rush Turnaround Time Requested - Prelims

(Rush TAT subject to approval/surcharge)

Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:

Email #2:

Telephone:

Fax:

Relinquished By:

Relinquished By:

Relinquished By:

Relinquished By:

Relinquished By:

Relinquished By:

Date/Time: 4/20/18 9:55

Date/Time: 4/20/18 1400

Date/Time: 4/20/18 1400

Date/Time: 4/21/18 1000

Date/Time: 4/21/18 1000

Date/Time: 4/21/18 1000

Received By:

Received By:

Received By:

Received By:

Received By:

Received By:

Date/Time: 4/20/18 9:55

Date/Time: 4/20/18 1400

Date/Time: 4/20/18 1400

Date/Time: 4/21/18 1000

Date/Time: 4/21/18 1000

Date/Time: 4/21/18 1000

PAGE Project No.

4067855

4067855

4067855

4067855

4067855

Receipt Temp = 20°C

Sample Receipt PH

OK / Adjusted

Cooper Custody Seal

Present / Not Present

Intact / Not Intact

Version 6.0 06/24/06

C019a(27 Jun 2006)

(Please Print Clearly)

Company Name:

Branch/Location:

Project Contact:

Phone:

Project Number:

Project Name:

Project State:

Sampled By (Print):

Sampled By (Sign):

PO #:

UPPER MIDWEST REGION

MN: 612-607-1700 WI: 920-469-2436



www.paceanals.com

CHAIN OF CUSTODY

Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?
(YES/NO)
PRESERVATION
(CODE)

Y/N
Pick
Letter

Quote #:

Mail To Contact:

Mail To Company:

Mail To Address:

Invoice To Contact:

Invoice To Company:

Invoice To Address:

Invoice To Phone:

CLIENT
COMMENTS

LAB COMMENTS
(Lab Use Only)

Profile #

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:

Email #2:

Telephone:

Fax:

Samples on HOLD are subject to
special pricing and release of liability

Relinquished By:

Relinquished By:

Relinquished By:

Relinquished By:

Relinquished By:

Date/Time:

Date/Time:

Date/Time:

Date/Time:

Date/Time:

Received By:

Received By:

Received By:

Received By:

Received By:

Date/Time:

Date/Time:

Date/Time:

Date/Time:

Date/Time:

PACE Project No.

Receipt Temp =

Sample Receipt pH

OK / Adjusted

Cooler Custody Seal

Present / Not Present

Sample Preservation Receipt Form

Client Name: Lowell

Project # 4067855

All containers needing preservation have been checked and noted below: ☐ Yes ☒ No ☐ N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/Time:

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302


Page 3 of 9

Pace Lab #	Glass					Plastic					Vials					Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU							
001																												2.5 / 5 / 10
002																												2.5 / 5 / 10
003																												2.5 / 5 / 10
004																												2.5 / 5 / 10
005																												2.5 / 5 / 10
006																												2.5 / 5 / 10
007																												2.5 / 5 / 10
008																												2.5 / 5 / 10
009																												2.5 / 5 / 10
010																												2.5 / 5 / 10
011																												2.5 / 5 / 10
012																												2.5 / 5 / 10
013																												2.5 / 5 / 10
014																												2.5 / 5 / 10
015																												2.5 / 5 / 10
016																												2.5 / 5 / 10
017																												2.5 / 5 / 10
018																												2.5 / 5 / 10
019																												2.5 / 5 / 10
020																												2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____

Headspace in VOA Vials (>6mm): ☐ Yes ☒ No ☐ N/A *If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 31Jan2018
	Document No.: F-GB-C-031-rev.06	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Ramboll
Courier: ☒ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Walco
☐ Client ☐ Pace Other: _____

Project #: _____

WO# : 40167855



Tracking #: _____

Custody Seal on Cooler/Box Present: ☒ yes ☐ no **Seals intact:** ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no **Seals intact:** ☐ yes ☒ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - N/A **Type of Ice:** Wet Blue Dry None

☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 10.2 ICorr: _____

Temp Blank Present: ☐ yes ☒ no

Biological Tissue is Frozen: ☐ yes ☒ no

Person examining contents:

Date: 4/21/18

Initials: RS

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A MS/MSD <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9. <u>all - old client covered vial tare weights</u>
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	<u>4/21/18</u>
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:		
Trip Blank Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 4/23/18

May 03, 2018

Donna Volk
Ramboll Environ
175 N. Corporate Dr.
Suite 160
Brookfield, WI 53045

RE: Project: 1690004946 WWV-SIT 12.57/12.58
Pace Project No.: 40168261

Dear Donna Volk:

Enclosed are the analytical results for sample(s) received by the laboratory on April 28, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Steven Mleczko
steve.mleczko@pacelabs.com
(920)469-2436
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40168261001	LG-B-13	Water	04/26/18 13:46	04/28/18 10:40
40168261002	LG-B-8	Water	04/26/18 14:22	04/28/18 10:40
40168260005	TRIP BLANK	Water	04/27/18 00:00	04/28/18 10:40

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40168261001	LG-B-13	EPA 8260	HNW	65
40168261002	LG-B-8	EPA 8260	HNW	65
40168260005	TRIP BLANK	EPA 8260	HNW	65

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40168261001	LG-B-13					
EPA 8260	Chloromethane	1.9	ug/L	1.0	05/02/18 00:34	
40168261002	LG-B-8					
EPA 8260	Bromodichloromethane	1.8	ug/L	1.0	05/02/18 00:56	
EPA 8260	Chloroform	2.9J	ug/L	5.0	05/02/18 00:56	
EPA 8260	Chloromethane	0.84J	ug/L	1.0	05/02/18 00:56	
EPA 8260	Dibromochloromethane	0.90J	ug/L	1.0	05/02/18 00:56	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

Sample: LG-B-13 **Lab ID: 40168261001** Collected: 04/26/18 13:46 Received: 04/28/18 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Analytical Method: EPA 8260									
Benzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		05/02/18 00:34	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		05/02/18 00:34	74-97-5	
Bromodichloromethane	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		05/02/18 00:34	74-83-9	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	104-51-8	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		05/02/18 00:34	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		05/02/18 00:34	98-06-6	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		05/02/18 00:34	75-00-3	
Chloroform	<2.5	ug/L	5.0	2.5	1		05/02/18 00:34	67-66-3	
Chloromethane	1.9	ug/L	1.0	0.50	1		05/02/18 00:34	74-87-3	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	95-49-8	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		05/02/18 00:34	106-43-4	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		05/02/18 00:34	96-12-8	
Dibromochloromethane	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	124-48-1	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		05/02/18 00:34	106-93-4	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		05/02/18 00:34	74-95-3	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	95-50-1	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	541-73-1	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	106-46-7	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		05/02/18 00:34	75-71-8	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		05/02/18 00:34	75-34-3	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		05/02/18 00:34	107-06-2	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		05/02/18 00:34	75-35-4	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		05/02/18 00:34	156-59-2	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		05/02/18 00:34	156-60-5	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		05/02/18 00:34	78-87-5	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	142-28-9	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		05/02/18 00:34	594-20-7	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		05/02/18 00:34	563-58-6	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	10061-01-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		05/02/18 00:34	10061-02-6	
Diisopropyl ether	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	108-20-3	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		05/02/18 00:34	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		05/02/18 00:34	98-82-8	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	99-87-6	
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		05/02/18 00:34	75-09-2	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		05/02/18 00:34	1634-04-4	
Naphthalene	<2.5	ug/L	5.0	2.5	1		05/02/18 00:34	91-20-3	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	103-65-1	
Styrene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	100-42-5	
1,1,1,2-Tetrachloroethane	<0.18	ug/L	1.0	0.18	1		05/02/18 00:34	630-20-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

Sample: LG-B-13 **Lab ID: 40168261001** Collected: 04/26/18 13:46 Received: 04/28/18 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Analytical Method: EPA 8260									
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		05/02/18 00:34	79-34-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	108-88-3	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		05/02/18 00:34	87-61-6	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		05/02/18 00:34	120-82-1	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	71-55-6	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		05/02/18 00:34	79-00-5	
Trichloroethene	<0.33	ug/L	1.0	0.33	1		05/02/18 00:34	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		05/02/18 00:34	75-69-4	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	96-18-4	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	95-63-6	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	108-67-8	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		05/02/18 00:34	75-01-4	
Xylene (Total)	<1.5	ug/L	3.0	1.5	1		05/02/18 00:34	1330-20-7	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		05/02/18 00:34	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:34	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	89	%	61-130		1		05/02/18 00:34	460-00-4	
Dibromofluoromethane (S)	98	%	67-130		1		05/02/18 00:34	1868-53-7	
Toluene-d8 (S)	92	%	70-130		1		05/02/18 00:34	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

Sample: LG-B-8 **Lab ID: 40168261002** Collected: 04/26/18 14:22 Received: 04/28/18 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Benzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		05/02/18 00:56	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		05/02/18 00:56	74-97-5	
Bromodichloromethane	1.8	ug/L	1.0	0.50	1		05/02/18 00:56	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		05/02/18 00:56	74-83-9	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	104-51-8	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		05/02/18 00:56	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		05/02/18 00:56	98-06-6	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		05/02/18 00:56	75-00-3	
Chloroform	2.9J	ug/L	5.0	2.5	1		05/02/18 00:56	67-66-3	
Chloromethane	0.84J	ug/L	1.0	0.50	1		05/02/18 00:56	74-87-3	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	95-49-8	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		05/02/18 00:56	106-43-4	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		05/02/18 00:56	96-12-8	
Dibromochloromethane	0.90J	ug/L	1.0	0.50	1		05/02/18 00:56	124-48-1	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		05/02/18 00:56	106-93-4	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		05/02/18 00:56	74-95-3	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	95-50-1	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	541-73-1	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	106-46-7	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		05/02/18 00:56	75-71-8	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		05/02/18 00:56	75-34-3	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		05/02/18 00:56	107-06-2	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		05/02/18 00:56	75-35-4	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		05/02/18 00:56	156-59-2	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		05/02/18 00:56	156-60-5	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		05/02/18 00:56	78-87-5	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	142-28-9	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		05/02/18 00:56	594-20-7	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		05/02/18 00:56	563-58-6	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	10061-01-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		05/02/18 00:56	10061-02-6	
Diisopropyl ether	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	108-20-3	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		05/02/18 00:56	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		05/02/18 00:56	98-82-8	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	99-87-6	
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		05/02/18 00:56	75-09-2	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		05/02/18 00:56	1634-04-4	
Naphthalene	<2.5	ug/L	5.0	2.5	1		05/02/18 00:56	91-20-3	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	103-65-1	
Styrene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	100-42-5	
1,1,1,2-Tetrachloroethane	<0.18	ug/L	1.0	0.18	1		05/02/18 00:56	630-20-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

Sample: LG-B-8 **Lab ID: 40168261002** Collected: 04/26/18 14:22 Received: 04/28/18 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Analytical Method: EPA 8260									
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		05/02/18 00:56	79-34-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	108-88-3	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		05/02/18 00:56	87-61-6	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		05/02/18 00:56	120-82-1	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	71-55-6	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		05/02/18 00:56	79-00-5	
Trichloroethene	<0.33	ug/L	1.0	0.33	1		05/02/18 00:56	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		05/02/18 00:56	75-69-4	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	96-18-4	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	95-63-6	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	108-67-8	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		05/02/18 00:56	75-01-4	
Xylene (Total)	<1.5	ug/L	3.0	1.5	1		05/02/18 00:56	1330-20-7	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		05/02/18 00:56	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		05/02/18 00:56	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	88	%	61-130		1		05/02/18 00:56	460-00-4	
Dibromofluoromethane (S)	97	%	67-130		1		05/02/18 00:56	1868-53-7	
Toluene-d8 (S)	92	%	70-130		1		05/02/18 00:56	2037-26-5	

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

Sample: TRIP BLANK **Lab ID: 40168260005** Collected: 04/27/18 00:00 Received: 04/28/18 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Benzene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	71-43-2	
Bromobenzene	<0.23	ug/L	1.0	0.23	1		05/03/18 10:53	108-86-1	
Bromochloromethane	<0.34	ug/L	1.0	0.34	1		05/03/18 10:53	74-97-5	
Bromodichloromethane	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	75-27-4	
Bromoform	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	75-25-2	
Bromomethane	<2.4	ug/L	5.0	2.4	1		05/03/18 10:53	74-83-9	
n-Butylbenzene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	104-51-8	
sec-Butylbenzene	<2.2	ug/L	5.0	2.2	1		05/03/18 10:53	135-98-8	
tert-Butylbenzene	<0.18	ug/L	1.0	0.18	1		05/03/18 10:53	98-06-6	
Carbon tetrachloride	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	56-23-5	
Chlorobenzene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	108-90-7	
Chloroethane	<0.37	ug/L	1.0	0.37	1		05/03/18 10:53	75-00-3	
Chloroform	<2.5	ug/L	5.0	2.5	1		05/03/18 10:53	67-66-3	
Chloromethane	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	74-87-3	
2-Chlorotoluene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	95-49-8	
4-Chlorotoluene	<0.21	ug/L	1.0	0.21	1		05/03/18 10:53	106-43-4	
1,2-Dibromo-3-chloropropane	<2.2	ug/L	5.0	2.2	1		05/03/18 10:53	96-12-8	
Dibromochloromethane	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	124-48-1	
1,2-Dibromoethane (EDB)	<0.18	ug/L	1.0	0.18	1		05/03/18 10:53	106-93-4	
Dibromomethane	<0.43	ug/L	1.0	0.43	1		05/03/18 10:53	74-95-3	
1,2-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	95-50-1	
1,3-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	541-73-1	
1,4-Dichlorobenzene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	106-46-7	
Dichlorodifluoromethane	<0.22	ug/L	1.0	0.22	1		05/03/18 10:53	75-71-8	
1,1-Dichloroethane	<0.24	ug/L	1.0	0.24	1		05/03/18 10:53	75-34-3	
1,2-Dichloroethane	<0.17	ug/L	1.0	0.17	1		05/03/18 10:53	107-06-2	
1,1-Dichloroethene	<0.41	ug/L	1.0	0.41	1		05/03/18 10:53	75-35-4	
cis-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		05/03/18 10:53	156-59-2	
trans-1,2-Dichloroethene	<0.26	ug/L	1.0	0.26	1		05/03/18 10:53	156-60-5	
1,2-Dichloropropane	<0.23	ug/L	1.0	0.23	1		05/03/18 10:53	78-87-5	
1,3-Dichloropropane	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	142-28-9	
2,2-Dichloropropane	<0.48	ug/L	1.0	0.48	1		05/03/18 10:53	594-20-7	
1,1-Dichloropropene	<0.44	ug/L	1.0	0.44	1		05/03/18 10:53	563-58-6	
cis-1,3-Dichloropropene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	10061-01-5	
trans-1,3-Dichloropropene	<0.23	ug/L	1.0	0.23	1		05/03/18 10:53	10061-02-6	
Diisopropyl ether	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	108-20-3	
Ethylbenzene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	100-41-4	
Hexachloro-1,3-butadiene	<2.1	ug/L	5.0	2.1	1		05/03/18 10:53	87-68-3	
Isopropylbenzene (Cumene)	<0.14	ug/L	1.0	0.14	1		05/03/18 10:53	98-82-8	
p-Isopropyltoluene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	99-87-6	
Methylene Chloride	<0.23	ug/L	1.0	0.23	1		05/03/18 10:53	75-09-2	
Methyl-tert-butyl ether	<0.17	ug/L	1.0	0.17	1		05/03/18 10:53	1634-04-4	
Naphthalene	<2.5	ug/L	5.0	2.5	1		05/03/18 10:53	91-20-3	
n-Propylbenzene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	103-65-1	
Styrene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	100-42-5	
1,1,1,2-Tetrachloroethane	<0.18	ug/L	1.0	0.18	1		05/03/18 10:53	630-20-6	

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ANALYTICAL RESULTS

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

Sample: TRIP BLANK **Lab ID: 40168260005** Collected: 04/27/18 00:00 Received: 04/28/18 10:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Analytical Method: EPA 8260									
1,1,2,2-Tetrachloroethane	<0.25	ug/L	1.0	0.25	1		05/03/18 10:53	79-34-5	
Tetrachloroethene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	127-18-4	
Toluene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	108-88-3	
1,2,3-Trichlorobenzene	<2.1	ug/L	5.0	2.1	1		05/03/18 10:53	87-61-6	
1,2,4-Trichlorobenzene	<2.2	ug/L	5.0	2.2	1		05/03/18 10:53	120-82-1	
1,1,1-Trichloroethane	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	71-55-6	
1,1,2-Trichloroethane	<0.20	ug/L	1.0	0.20	1		05/03/18 10:53	79-00-5	
Trichloroethene	<0.33	ug/L	1.0	0.33	1		05/03/18 10:53	79-01-6	
Trichlorofluoromethane	<0.18	ug/L	1.0	0.18	1		05/03/18 10:53	75-69-4	
1,2,3-Trichloropropane	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	96-18-4	
1,2,4-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	95-63-6	
1,3,5-Trimethylbenzene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	108-67-8	
Vinyl chloride	<0.18	ug/L	1.0	0.18	1		05/03/18 10:53	75-01-4	
Xylene (Total)	<1.5	ug/L	3.0	1.5	1		05/03/18 10:53	1330-20-7	
m&p-Xylene	<1.0	ug/L	2.0	1.0	1		05/03/18 10:53	179601-23-1	
o-Xylene	<0.50	ug/L	1.0	0.50	1		05/03/18 10:53	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	92	%	61-130		1		05/03/18 10:53	460-00-4	
Dibromofluoromethane (S)	103	%	67-130		1		05/03/18 10:53	1868-53-7	
Toluene-d8 (S)	100	%	70-130		1		05/03/18 10:53	2037-26-5	

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

QC Batch:	287351	Analysis Method:	EPA 8260
QC Batch Method:	EPA 8260	Analysis Description:	8260 MSV
Associated Lab Samples:	40168260005		

METHOD BLANK: 1681496 Matrix: Water

Associated Lab Samples: 40168260005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	05/02/18 07:11	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	05/02/18 07:11	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	05/02/18 07:11	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	05/02/18 07:11	
1,1-Dichloroethane	ug/L	<0.24	1.0	05/02/18 07:11	
1,1-Dichloroethene	ug/L	<0.41	1.0	05/02/18 07:11	
1,1-Dichloropropene	ug/L	<0.44	1.0	05/02/18 07:11	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	05/02/18 07:11	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	05/02/18 07:11	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	05/02/18 07:11	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	05/02/18 07:11	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	05/02/18 07:11	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	05/02/18 07:11	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	05/02/18 07:11	
1,2-Dichloroethane	ug/L	<0.17	1.0	05/02/18 07:11	
1,2-Dichloropropane	ug/L	<0.23	1.0	05/02/18 07:11	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	05/02/18 07:11	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	05/02/18 07:11	
1,3-Dichloropropane	ug/L	<0.50	1.0	05/02/18 07:11	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	05/02/18 07:11	
2,2-Dichloropropane	ug/L	<0.48	1.0	05/02/18 07:11	
2-Chlorotoluene	ug/L	<0.50	1.0	05/02/18 07:11	
4-Chlorotoluene	ug/L	<0.21	1.0	05/02/18 07:11	
Benzene	ug/L	<0.50	1.0	05/02/18 07:11	
Bromobenzene	ug/L	<0.23	1.0	05/02/18 07:11	
Bromochloromethane	ug/L	<0.34	1.0	05/02/18 07:11	
Bromodichloromethane	ug/L	<0.50	1.0	05/02/18 07:11	
Bromoform	ug/L	<0.50	1.0	05/02/18 07:11	
Bromomethane	ug/L	<2.4	5.0	05/02/18 07:11	
Carbon tetrachloride	ug/L	<0.50	1.0	05/02/18 07:11	
Chlorobenzene	ug/L	<0.50	1.0	05/02/18 07:11	
Chloroethane	ug/L	<0.37	1.0	05/02/18 07:11	
Chloroform	ug/L	<2.5	5.0	05/02/18 07:11	
Chloromethane	ug/L	<0.50	1.0	05/02/18 07:11	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	05/02/18 07:11	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	05/02/18 07:11	
Dibromochloromethane	ug/L	<0.50	1.0	05/02/18 07:11	
Dibromomethane	ug/L	<0.43	1.0	05/02/18 07:11	
Dichlorodifluoromethane	ug/L	<0.22	1.0	05/02/18 07:11	
Diisopropyl ether	ug/L	<0.50	1.0	05/02/18 07:11	
Ethylbenzene	ug/L	<0.50	1.0	05/02/18 07:11	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

METHOD BLANK: 1681496

Matrix: Water

Associated Lab Samples: 40168260005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	05/02/18 07:11	
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	05/02/18 07:11	
m&p-Xylene	ug/L	<1.0	2.0	05/02/18 07:11	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	05/02/18 07:11	
Methylene Chloride	ug/L	<0.23	1.0	05/02/18 07:11	
n-Butylbenzene	ug/L	<0.50	1.0	05/02/18 07:11	
n-Propylbenzene	ug/L	<0.50	1.0	05/02/18 07:11	
Naphthalene	ug/L	<2.5	5.0	05/02/18 07:11	
o-Xylene	ug/L	<0.50	1.0	05/02/18 07:11	
p-Isopropyltoluene	ug/L	<0.50	1.0	05/02/18 07:11	
sec-Butylbenzene	ug/L	<2.2	5.0	05/02/18 07:11	
Styrene	ug/L	<0.50	1.0	05/02/18 07:11	
tert-Butylbenzene	ug/L	<0.18	1.0	05/02/18 07:11	
Tetrachloroethene	ug/L	<0.50	1.0	05/02/18 07:11	
Toluene	ug/L	<0.50	1.0	05/02/18 07:11	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	05/02/18 07:11	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	05/02/18 07:11	
Trichloroethene	ug/L	<0.33	1.0	05/02/18 07:11	
Trichlorofluoromethane	ug/L	<0.18	1.0	05/02/18 07:11	
Vinyl chloride	ug/L	<0.18	1.0	05/02/18 07:11	
Xylene (Total)	ug/L	<1.5	3.0	05/02/18 07:11	
4-Bromofluorobenzene (S)	%	93	61-130	05/02/18 07:11	
Dibromofluoromethane (S)	%	99	67-130	05/02/18 07:11	
Toluene-d8 (S)	%	100	70-130	05/02/18 07:11	

LABORATORY CONTROL SAMPLE: 1681497

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	50.0	100	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	51.1	102	70-130	
1,1,2-Trichloroethane	ug/L	50	52.3	105	70-130	
1,1-Dichloroethane	ug/L	50	63.6	127	71-132	
1,1-Dichloroethene	ug/L	50	61.7	123	75-130	
1,2,4-Trichlorobenzene	ug/L	50	52.0	104	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	42.4	85	63-123	
1,2-Dibromoethane (EDB)	ug/L	50	52.4	105	70-130	
1,2-Dichlorobenzene	ug/L	50	52.9	106	70-130	
1,2-Dichloroethane	ug/L	50	48.7	97	70-131	
1,2-Dichloropropane	ug/L	50	53.0	106	80-120	
1,3-Dichlorobenzene	ug/L	50	53.7	107	70-130	
1,4-Dichlorobenzene	ug/L	50	52.1	104	70-130	
Benzene	ug/L	50	51.3	103	73-145	
Bromodichloromethane	ug/L	50	50.0	100	70-130	
Bromoform	ug/L	50	42.5	85	67-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

LABORATORY CONTROL SAMPLE: 1681497

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/L	50	49.8	100	26-128	
Carbon tetrachloride	ug/L	50	48.3	97	70-133	
Chlorobenzene	ug/L	50	54.1	108	70-130	
Chloroethane	ug/L	50	54.0	108	58-120	
Chloroform	ug/L	50	48.7	97	80-121	
Chloromethane	ug/L	50	42.3	85	40-127	
cis-1,2-Dichloroethene	ug/L	50	50.5	101	70-130	
cis-1,3-Dichloropropene	ug/L	50	49.8	100	70-130	
Dibromochloromethane	ug/L	50	53.8	108	70-130	
Dichlorodifluoromethane	ug/L	50	27.3	55	20-135	
Ethylbenzene	ug/L	50	55.1	110	87-129	
Isopropylbenzene (Cumene)	ug/L	50	55.7	111	70-130	
m&p-Xylene	ug/L	100	112	112	70-130	
Methyl-tert-butyl ether	ug/L	50	56.2	112	66-143	
Methylene Chloride	ug/L	50	59.6	119	70-130	
o-Xylene	ug/L	50	54.6	109	70-130	
Styrene	ug/L	50	55.0	110	70-130	
Tetrachloroethene	ug/L	50	56.0	112	70-130	
Toluene	ug/L	50	53.4	107	82-130	
trans-1,2-Dichloroethene	ug/L	50	61.8	124	75-132	
trans-1,3-Dichloropropene	ug/L	50	47.7	95	70-130	
Trichloroethene	ug/L	50	54.9	110	70-130	
Trichlorofluoromethane	ug/L	50	61.1	122	76-133	
Vinyl chloride	ug/L	50	49.3	99	57-136	
Xylene (Total)	ug/L	150	167	111	70-130	
4-Bromofluorobenzene (S)	%			98	61-130	
Dibromofluoromethane (S)	%			99	67-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1681916 1681917

Parameter	Units	40168244002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/L	<0.50	50	50	51.7	50.3	103	101	70-134	3	20	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	50	50	52.6	51.3	105	103	70-130	3	20	
1,1,2-Trichloroethane	ug/L	<0.20	50	50	53.3	50.0	107	100	70-130	6	20	
1,1-Dichloroethane	ug/L	<0.24	50	50	64.8	62.8	130	126	71-133	3	20	
1,1-Dichloroethene	ug/L	<0.41	50	50	62.8	61.9	126	124	75-136	1	20	
1,2,4-Trichlorobenzene	ug/L	<2.2	50	50	54.3	52.1	108	104	70-130	4	20	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	50	50	45.2	44.4	90	89	63-123	2	20	
1,2-Dibromoethane (EDB)	ug/L	<0.18	50	50	52.7	49.9	105	100	70-130	6	20	
1,2-Dichlorobenzene	ug/L	<0.50	50	50	55.0	51.8	110	104	70-130	6	20	
1,2-Dichloroethane	ug/L	<0.17	50	50	49.3	49.6	99	99	70-131	0	20	
1,2-Dichloropropane	ug/L	<0.23	50	50	53.9	49.9	108	100	80-120	8	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1681916 1681917											
Parameter	Units	40168244002 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max	
			Spike Conc.	Spike Conc.						RPD	RPD
1,3-Dichlorobenzene	ug/L	<0.50	50	50	55.7	52.8	111	106	70-130	5	20
1,4-Dichlorobenzene	ug/L	<0.50	50	50	54.2	51.1	108	102	70-130	6	20
Benzene	ug/L	<0.50	50	50	52.3	51.0	105	102	73-145	2	20
Bromodichloromethane	ug/L	<0.50	50	50	50.7	48.3	101	97	70-130	5	20
Bromoform	ug/L	<0.50	50	50	43.6	41.5	87	83	67-130	5	20
Bromomethane	ug/L	<2.4	50	50	51.6	50.1	103	100	26-129	3	20
Carbon tetrachloride	ug/L	<0.50	50	50	50.8	49.8	102	100	70-134	2	20
Chlorobenzene	ug/L	<0.50	50	50	56.0	52.1	112	104	70-130	7	20
Chloroethane	ug/L	<0.37	50	50	58.7	55.2	117	110	58-120	6	20
Chloroform	ug/L	<2.5	50	50	49.7	48.5	99	97	80-121	2	20
Chloromethane	ug/L	<0.50	50	50	43.5	41.7	86	83	40-128	4	20
cis-1,2-Dichloroethene	ug/L	<0.26	50	50	52.1	51.1	104	102	70-130	2	20
cis-1,3-Dichloropropene	ug/L	<0.50	50	50	50.5	47.6	101	95	70-130	6	20
Dibromochloromethane	ug/L	<0.50	50	50	54.8	52.4	110	105	70-130	4	20
Dichlorodifluoromethane	ug/L	<0.22	50	50	27.5	26.7	55	53	20-146	3	20
Ethylbenzene	ug/L	<0.50	50	50	56.5	52.4	113	105	87-129	7	20
Isopropylbenzene (Cumene)	ug/L	<0.14	50	50	57.9	53.7	116	107	70-130	8	20
m&p-Xylene	ug/L	<1.0	100	100	115	107	115	107	70-130	7	20
Methyl-tert-butyl ether	ug/L	<0.17	50	50	56.4	55.6	113	111	66-143	2	20
Methylene Chloride	ug/L	<0.23	50	50	59.7	58.8	119	118	70-130	2	20
o-Xylene	ug/L	<0.50	50	50	56.8	52.4	114	105	70-130	8	20
Styrene	ug/L	<0.50	50	50	57.0	52.5	114	105	70-130	8	20
Tetrachloroethene	ug/L	<0.50	50	50	57.4	54.0	115	108	70-130	6	20
Toluene	ug/L	<0.50	50	50	55.1	51.3	110	103	82-131	7	20
trans-1,2-Dichloroethene	ug/L	<0.26	50	50	63.4	61.5	127	123	75-135	3	20
trans-1,3-Dichloropropene	ug/L	<0.23	50	50	49.4	46.7	99	93	70-130	6	20
Trichloroethene	ug/L	<0.33	50	50	54.9	52.1	110	104	70-130	5	20
Trichlorofluoromethane	ug/L	<0.18	50	50	62.2	60.6	124	121	76-150	3	20
Vinyl chloride	ug/L	<0.18	50	50	50.1	49.0	100	98	56-143	2	20
Xylene (Total)	ug/L	<1.5	150	150	172	160	114	106	70-130	7	20
4-Bromofluorobenzene (S)	%						98	97	61-130		
Dibromofluoromethane (S)	%						100	106	67-130		
Toluene-d8 (S)	%						101	100	70-130		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SIT 12.57/12.58
Pace Project No.: 40168261

QC Batch:	287356	Analysis Method:	EPA 8260
QC Batch Method:	EPA 8260	Analysis Description:	8260 MSV
Associated Lab Samples: 40168261001, 40168261002			

METHOD BLANK:	1681512	Matrix:	Water
Associated Lab Samples: 40168261001, 40168261002			

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.18	1.0	05/01/18 16:43	
1,1,1-Trichloroethane	ug/L	<0.50	1.0	05/01/18 16:43	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	1.0	05/01/18 16:43	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	05/01/18 16:43	
1,1-Dichloroethane	ug/L	<0.24	1.0	05/01/18 16:43	
1,1-Dichloroethene	ug/L	<0.41	1.0	05/01/18 16:43	
1,1-Dichloropropene	ug/L	<0.44	1.0	05/01/18 16:43	
1,2,3-Trichlorobenzene	ug/L	<2.1	5.0	05/01/18 16:43	
1,2,3-Trichloropropane	ug/L	<0.50	1.0	05/01/18 16:43	
1,2,4-Trichlorobenzene	ug/L	<2.2	5.0	05/01/18 16:43	
1,2,4-Trimethylbenzene	ug/L	<0.50	1.0	05/01/18 16:43	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	05/01/18 16:43	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	05/01/18 16:43	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	05/01/18 16:43	
1,2-Dichloroethane	ug/L	<0.17	1.0	05/01/18 16:43	
1,2-Dichloropropane	ug/L	<0.23	1.0	05/01/18 16:43	
1,3,5-Trimethylbenzene	ug/L	<0.50	1.0	05/01/18 16:43	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	05/01/18 16:43	
1,3-Dichloropropane	ug/L	<0.50	1.0	05/01/18 16:43	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	05/01/18 16:43	
2,2-Dichloropropane	ug/L	<0.48	1.0	05/01/18 16:43	
2-Chlorotoluene	ug/L	<0.50	1.0	05/01/18 16:43	
4-Chlorotoluene	ug/L	<0.21	1.0	05/01/18 16:43	
Benzene	ug/L	<0.50	1.0	05/01/18 16:43	
Bromobenzene	ug/L	<0.23	1.0	05/01/18 16:43	
Bromochloromethane	ug/L	<0.34	1.0	05/01/18 16:43	
Bromodichloromethane	ug/L	<0.50	1.0	05/01/18 16:43	
Bromoform	ug/L	<0.50	1.0	05/01/18 16:43	
Bromomethane	ug/L	<2.4	5.0	05/01/18 16:43	
Carbon tetrachloride	ug/L	<0.50	1.0	05/01/18 16:43	
Chlorobenzene	ug/L	<0.50	1.0	05/01/18 16:43	
Chloroethane	ug/L	<0.37	1.0	05/01/18 16:43	
Chloroform	ug/L	<2.5	5.0	05/01/18 16:43	
Chloromethane	ug/L	<0.50	1.0	05/01/18 16:43	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	05/01/18 16:43	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	05/01/18 16:43	
Dibromochloromethane	ug/L	<0.50	1.0	05/01/18 16:43	
Dibromomethane	ug/L	<0.43	1.0	05/01/18 16:43	
Dichlorodifluoromethane	ug/L	<0.22	1.0	05/01/18 16:43	
Diisopropyl ether	ug/L	<0.50	1.0	05/01/18 16:43	
Ethylbenzene	ug/L	<0.50	1.0	05/01/18 16:43	

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

METHOD BLANK: 1681512

Matrix: Water

Associated Lab Samples: 40168261001, 40168261002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/L	<2.1	5.0	05/01/18 16:43	
Isopropylbenzene (Cumene)	ug/L	<0.14	1.0	05/01/18 16:43	
m&p-Xylene	ug/L	<1.0	2.0	05/01/18 16:43	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	05/01/18 16:43	
Methylene Chloride	ug/L	<0.23	1.0	05/01/18 16:43	
n-Butylbenzene	ug/L	<0.50	1.0	05/01/18 16:43	
n-Propylbenzene	ug/L	<0.50	1.0	05/01/18 16:43	
Naphthalene	ug/L	<2.5	5.0	05/01/18 16:43	
o-Xylene	ug/L	<0.50	1.0	05/01/18 16:43	
p-Isopropyltoluene	ug/L	<0.50	1.0	05/01/18 16:43	
sec-Butylbenzene	ug/L	<2.2	5.0	05/01/18 16:43	
Styrene	ug/L	<0.50	1.0	05/01/18 16:43	
tert-Butylbenzene	ug/L	<0.18	1.0	05/01/18 16:43	
Tetrachloroethene	ug/L	<0.50	1.0	05/01/18 16:43	
Toluene	ug/L	<0.50	1.0	05/01/18 16:43	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	05/01/18 16:43	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	05/01/18 16:43	
Trichloroethene	ug/L	<0.33	1.0	05/01/18 16:43	
Trichlorofluoromethane	ug/L	<0.18	1.0	05/01/18 16:43	
Vinyl chloride	ug/L	<0.18	1.0	05/01/18 16:43	
Xylene (Total)	ug/L	<1.5	3.0	05/01/18 16:43	
4-Bromofluorobenzene (S)	%	89	61-130	05/01/18 16:43	
Dibromofluoromethane (S)	%	98	67-130	05/01/18 16:43	
Toluene-d8 (S)	%	93	70-130	05/01/18 16:43	

LABORATORY CONTROL SAMPLE: 1681513

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	46.4	93	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	41.2	82	70-130	
1,1,2-Trichloroethane	ug/L	50	46.4	93	70-130	
1,1-Dichloroethane	ug/L	50	36.1	72	71-132	
1,1-Dichloroethene	ug/L	50	42.6	85	75-130	
1,2,4-Trichlorobenzene	ug/L	50	47.2	94	70-130	
1,2-Dibromo-3-chloropropane	ug/L	50	40.9	82	63-123	
1,2-Dibromoethane (EDB)	ug/L	50	48.3	97	70-130	
1,2-Dichlorobenzene	ug/L	50	48.5	97	70-130	
1,2-Dichloroethane	ug/L	50	45.1	90	70-131	
1,2-Dichloropropane	ug/L	50	44.3	89	80-120	
1,3-Dichlorobenzene	ug/L	50	48.2	96	70-130	
1,4-Dichlorobenzene	ug/L	50	48.8	98	70-130	
Benzene	ug/L	50	43.9	88	73-145	
Bromodichloromethane	ug/L	50	47.4	95	70-130	
Bromoform	ug/L	50	49.6	99	67-130	

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

LABORATORY CONTROL SAMPLE: 1681513

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/L	50	29.1	58	26-128	
Carbon tetrachloride	ug/L	50	49.7	99	70-133	
Chlorobenzene	ug/L	50	50.0	100	70-130	
Chloroethane	ug/L	50	32.8	66	58-120	
Chloroform	ug/L	50	43.7	87	80-121	
Chloromethane	ug/L	50	24.9	50	40-127	
cis-1,2-Dichloroethene	ug/L	50	46.7	93	70-130	
cis-1,3-Dichloropropene	ug/L	50	42.6	85	70-130	
Dibromochloromethane	ug/L	50	50.4	101	70-130	
Dichlorodifluoromethane	ug/L	50	30.0	60	20-135	
Ethylbenzene	ug/L	50	49.0	98	87-129	
Isopropylbenzene (Cumene)	ug/L	50	51.5	103	70-130	
m&p-Xylene	ug/L	100	102	102	70-130	
Methyl-tert-butyl ether	ug/L	50	38.8	78	66-143	
Methylene Chloride	ug/L	50	39.4	79	70-130	
o-Xylene	ug/L	50	51.6	103	70-130	
Styrene	ug/L	50	50.6	101	70-130	
Tetrachloroethene	ug/L	50	51.4	103	70-130	
Toluene	ug/L	50	47.0	94	82-130	
trans-1,2-Dichloroethene	ug/L	50	41.9	84	75-132	
trans-1,3-Dichloropropene	ug/L	50	46.9	94	70-130	
Trichloroethene	ug/L	50	48.8	98	70-130	
Trichlorofluoromethane	ug/L	50	43.2	86	76-133	
Vinyl chloride	ug/L	50	31.1	62	57-136	
Xylene (Total)	ug/L	150	154	102	70-130	
4-Bromofluorobenzene (S)	%			95	61-130	
Dibromofluoromethane (S)	%			95	67-130	
Toluene-d8 (S)	%			95	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1681926 1681927

Parameter	Units	40168208002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/L	<0.50	50	50	48.1	49.1	96	98	70-134	2	20	
1,1,2,2-Tetrachloroethane	ug/L	<0.25	50	50	43.3	43.3	87	87	70-130	0	20	
1,1,2-Trichloroethane	ug/L	<0.20	50	50	48.6	47.9	97	96	70-130	1	20	
1,1-Dichloroethane	ug/L	<0.24	50	50	37.5	38.0	75	76	71-133	1	20	
1,1-Dichloroethene	ug/L	<0.41	50	50	43.1	44.4	86	89	75-136	3	20	
1,2,4-Trichlorobenzene	ug/L	<2.2	50	50	48.6	49.9	97	100	70-130	3	20	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	50	50	44.2	44.6	88	89	63-123	1	20	
1,2-Dibromoethane (EDB)	ug/L	<0.18	50	50	51.6	50.3	103	101	70-130	2	20	
1,2-Dichlorobenzene	ug/L	<0.50	50	50	50.3	49.9	101	100	70-130	1	20	
1,2-Dichloroethane	ug/L	<0.17	50	50	47.9	47.0	96	94	70-131	2	20	
1,2-Dichloropropane	ug/L	<0.23	50	50	46.5	45.8	93	92	80-120	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:			1681926		1681927							
Parameter	Units	40168208002 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
			Spike Conc.	Spike Conc.								
1,3-Dichlorobenzene	ug/L	<0.50	50	50	49.1	49.6	98	99	70-130	1	20	
1,4-Dichlorobenzene	ug/L	<0.50	50	50	50.0	50.1	100	100	70-130	0	20	
Benzene	ug/L	<0.50	50	50	45.9	45.6	92	91	73-145	1	20	
Bromodichloromethane	ug/L	<0.50	50	50	50.1	48.6	100	97	70-130	3	20	
Bromoform	ug/L	<0.50	50	50	51.5	51.7	103	103	67-130	1	20	
Bromomethane	ug/L	<2.4	50	50	32.3	32.4	65	65	26-129	0	20	
Carbon tetrachloride	ug/L	<0.50	50	50	50.2	52.4	100	105	70-134	4	20	
Chlorobenzene	ug/L	<0.50	50	50	51.6	51.3	103	103	70-130	0	20	
Chloroethane	ug/L	<0.37	50	50	33.5	33.7	67	67	58-120	1	20	
Chloroform	ug/L	<2.5	50	50	45.8	45.6	92	91	80-121	0	20	
Chloromethane	ug/L	<0.50	50	50	25.2	25.6	50	51	40-128	1	20	
cis-1,2-Dichloroethene	ug/L	<0.26	50	50	49.3	48.8	99	98	70-130	1	20	
cis-1,3-Dichloropropene	ug/L	<0.50	50	50	44.7	43.5	89	87	70-130	3	20	
Dibromochloromethane	ug/L	<0.50	50	50	52.6	52.3	105	105	70-130	1	20	
Dichlorodifluoromethane	ug/L	<0.22	50	50	24.5	29.9	49	60	20-146	20	20	
Ethylbenzene	ug/L	<0.50	50	50	49.9	50.3	100	101	87-129	1	20	
Isopropylbenzene (Cumene)	ug/L	<0.14	50	50	52.3	53.5	105	107	70-130	2	20	
m&p-Xylene	ug/L	<1.0	100	100	104	105	104	105	70-130	1	20	
Methyl-tert-butyl ether	ug/L	<0.17	50	50	40.8	40.3	82	81	66-143	1	20	
Methylene Chloride	ug/L	<0.23	50	50	41.5	40.7	83	81	70-130	2	20	
o-Xylene	ug/L	<0.50	50	50	53.7	53.1	107	106	70-130	1	20	
Styrene	ug/L	<0.50	50	50	52.0	51.1	104	102	70-130	2	20	
Tetrachloroethene	ug/L	<0.50	50	50	51.4	53.7	103	107	70-130	4	20	
Toluene	ug/L	<0.50	50	50	48.4	47.7	97	95	82-131	1	20	
trans-1,2-Dichloroethene	ug/L	<0.26	50	50	43.3	43.9	87	88	75-135	1	20	
trans-1,3-Dichloropropene	ug/L	<0.23	50	50	49.2	47.8	98	96	70-130	3	20	
Trichloroethene	ug/L	<0.33	50	50	50.8	50.2	102	100	70-130	1	20	
Trichlorofluoromethane	ug/L	<0.18	50	50	40.5	44.9	81	90	76-150	10	20	
Vinyl chloride	ug/L	<0.18	50	50	30.5	32.1	61	64	56-143	5	20	
Xylene (Total)	ug/L	<1.5	150	150	158	158	105	105	70-130	0	20	
4-Bromofluorobenzene (S)	%						93	94	61-130			
Dibromofluoromethane (S)	%						97	97	67-130			
Toluene-d8 (S)	%						94	95	70-130			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

WORKORDER QUALIFIERS

WO: 40168261

[1] Trip Blank from 40168260. SVM 5/3/18

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1690004946 WWV-SIT 12.57/12.58

Pace Project No.: 40168261

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40168260005	TRIP BLANK	EPA 8260	287351		
40168261001	LG-B-13	EPA 8260	287356		
40168261002	LG-B-8	EPA 8260	287356		

REPORT OF LABORATORY ANALYSIS

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Sample Preservation Receipt Form

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Client Name: Rembold

Project # 40168261

All containers needing preservation have been checked and noted below: ☐ Yes ☒ No ☐ N/A

Lab Lot# of pH paper:

Lab Std #/ID of preservation (if pH adjusted):

Initial when completed:


Date/Time:

Pace Lab #	Glass						Plastic						Vials						Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T							
001																														2.5 / 5 / 10	
002																														2.5 / 5 / 10	
003																														2.5 / 5 / 10	
004																														2.5 / 5 / 10	
005																														2.5 / 5 / 10	
006																														2.5 / 5 / 10	
007																														2.5 / 5 / 10	
008																														2.5 / 5 / 10	
009																														2.5 / 5 / 10	
010																														2.5 / 5 / 10	
011																														2.5 / 5 / 10	
012																														2.5 / 5 / 10	
013																														2.5 / 5 / 10	
014																														2.5 / 5 / 10	
015																														2.5 / 5 / 10	
016																														2.5 / 5 / 10	
017																														2.5 / 5 / 10	
018																														2.5 / 5 / 10	
019																														2.5 / 5 / 10	
020																														2.5 / 5 / 10	

Exceptions to preservation check: VOA, California, TOC, TOH, O&G, WI DRO, Phenolics, Other: _____

Headspace in VOA Vials (>6mm) : ☐ Yes ☒ No ☐ N/A *If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL	SP5T	120 mL plastic Na Thiosulfate ziploc bag
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH		
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI		
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			ZPLC	
						GN:	

 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 25Apr2018
	Document No.: F-GB-C-031-Rev.07	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Ramboll

Project #: **WO#: 40168261**

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Walto
☐ Client ☐ Pace Other: _____



Tracking #: 7807 2707 8525

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - N/A Type of Ice: ☒ Wet ☐ Blue ☐ Dry ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 10.2 / Corr: _____

Temp Blank Present: ☐ yes ☒ no

Biological Tissue is Frozen: ☐ yes ☐ no

Person examining contents:

Date: 4/28/18
Initials: RS

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	10. NO Trip Blank received 4/28/18
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution:

If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 4/30/18

August 28, 2018

Donna Volk
Ramboll Environ
175 N. Corporate Dr.
Suite 160
Brookfield, WI 53045

RE: Project: 1690004946 WWU SITE12.57/12.58
Pace Project No.: 40174581

Dear Donna Volk:

Enclosed are the analytical results for sample(s) received by the laboratory on August 24, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Steven Mleczko
steve.mleczko@pacelabs.com
(920)469-2436
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40174581001	LG-B-8	Water	08/22/18 13:53	08/24/18 09:20
40174581002	LG-B-13	Water	08/22/18 14:30	08/24/18 09:20
40174581003	TRIP BLANK	Water	08/22/18 00:00	08/24/18 09:20

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40174581001	LG-B-8	EPA 8260	HNW	65
40174581002	LG-B-13	EPA 8260	HNW	65
40174581003	TRIP BLANK	EPA 8260	HNW	65

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40174581001	LG-B-8					
EPA 8260	Bromodichloromethane	0.79J	ug/L	1.2	08/28/18 01:01	
EPA 8260	Tetrachloroethene	0.33J	ug/L	1.1	08/28/18 01:01	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

Sample: LG-B-8 **Lab ID: 40174581001** Collected: 08/22/18 13:53 Received: 08/24/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Benzene	<0.25	ug/L	1.0	0.25	1		08/28/18 01:01	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		08/28/18 01:01	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		08/28/18 01:01	74-97-5	
Bromodichloromethane	0.79J	ug/L	1.2	0.36	1		08/28/18 01:01	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		08/28/18 01:01	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		08/28/18 01:01	74-83-9	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		08/28/18 01:01	104-51-8	
sec-Butylbenzene	<0.85	ug/L	5.0	0.85	1		08/28/18 01:01	135-98-8	
tert-Butylbenzene	<0.30	ug/L	1.0	0.30	1		08/28/18 01:01	98-06-6	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		08/28/18 01:01	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		08/28/18 01:01	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		08/28/18 01:01	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		08/28/18 01:01	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		08/28/18 01:01	74-87-3	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		08/28/18 01:01	95-49-8	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		08/28/18 01:01	106-43-4	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		08/28/18 01:01	96-12-8	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		08/28/18 01:01	124-48-1	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		08/28/18 01:01	106-93-4	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		08/28/18 01:01	74-95-3	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		08/28/18 01:01	95-50-1	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		08/28/18 01:01	541-73-1	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		08/28/18 01:01	106-46-7	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		08/28/18 01:01	75-71-8	
1,1-Dichloroethane	<0.27	ug/L	1.0	0.27	1		08/28/18 01:01	75-34-3	
1,2-Dichloroethane	<0.28	ug/L	1.0	0.28	1		08/28/18 01:01	107-06-2	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		08/28/18 01:01	75-35-4	
cis-1,2-Dichloroethene	<0.27	ug/L	1.0	0.27	1		08/28/18 01:01	156-59-2	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		08/28/18 01:01	156-60-5	
1,2-Dichloropropane	<0.28	ug/L	1.0	0.28	1		08/28/18 01:01	78-87-5	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		08/28/18 01:01	142-28-9	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		08/28/18 01:01	594-20-7	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		08/28/18 01:01	563-58-6	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		08/28/18 01:01	10061-01-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		08/28/18 01:01	10061-02-6	
Diisopropyl ether	<1.9	ug/L	6.3	1.9	1		08/28/18 01:01	108-20-3	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		08/28/18 01:01	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		08/28/18 01:01	87-68-3	
Isopropylbenzene (Cumene)	<0.39	ug/L	5.0	0.39	1		08/28/18 01:01	98-82-8	
p-Isopropyltoluene	<0.80	ug/L	2.7	0.80	1		08/28/18 01:01	99-87-6	
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		08/28/18 01:01	75-09-2	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		08/28/18 01:01	1634-04-4	
Naphthalene	<1.2	ug/L	5.0	1.2	1		08/28/18 01:01	91-20-3	
n-Propylbenzene	<0.81	ug/L	5.0	0.81	1		08/28/18 01:01	103-65-1	
Styrene	<0.47	ug/L	1.6	0.47	1		08/28/18 01:01	100-42-5	
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		08/28/18 01:01	630-20-6	

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ANALYTICAL RESULTS

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

Sample: LG-B-8 **Lab ID: 40174581001** Collected: 08/22/18 13:53 Received: 08/24/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Analytical Method: EPA 8260									
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		08/28/18 01:01	79-34-5	
Tetrachloroethene	0.33J	ug/L	1.1	0.33	1		08/28/18 01:01	127-18-4	
Toluene	<0.17	ug/L	5.0	0.17	1		08/28/18 01:01	108-88-3	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		08/28/18 01:01	87-61-6	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		08/28/18 01:01	120-82-1	
1,1,1-Trichloroethane	<0.24	ug/L	1.0	0.24	1		08/28/18 01:01	71-55-6	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		08/28/18 01:01	79-00-5	
Trichloroethene	<0.26	ug/L	1.0	0.26	1		08/28/18 01:01	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		08/28/18 01:01	75-69-4	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		08/28/18 01:01	96-18-4	
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		08/28/18 01:01	95-63-6	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		08/28/18 01:01	108-67-8	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		08/28/18 01:01	75-01-4	
Xylene (Total)	<1.5	ug/L	3.0	1.5	1		08/28/18 01:01	1330-20-7	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		08/28/18 01:01	179601-23-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		08/28/18 01:01	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	89	%	70-130		1		08/28/18 01:01	460-00-4	
Dibromofluoromethane (S)	103	%	70-130		1		08/28/18 01:01	1868-53-7	
Toluene-d8 (S)	102	%	70-130		1		08/28/18 01:01	2037-26-5	

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ANALYTICAL RESULTS

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

Sample: LG-B-13 **Lab ID: 40174581002** Collected: 08/22/18 14:30 Received: 08/24/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
Benzene	<0.25	ug/L	1.0	0.25	1		08/28/18 01:22	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		08/28/18 01:22	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		08/28/18 01:22	74-97-5	
Bromodichloromethane	<0.36	ug/L	1.2	0.36	1		08/28/18 01:22	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		08/28/18 01:22	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		08/28/18 01:22	74-83-9	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		08/28/18 01:22	104-51-8	
sec-Butylbenzene	<0.85	ug/L	5.0	0.85	1		08/28/18 01:22	135-98-8	
tert-Butylbenzene	<0.30	ug/L	1.0	0.30	1		08/28/18 01:22	98-06-6	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		08/28/18 01:22	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		08/28/18 01:22	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		08/28/18 01:22	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		08/28/18 01:22	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		08/28/18 01:22	74-87-3	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		08/28/18 01:22	95-49-8	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		08/28/18 01:22	106-43-4	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		08/28/18 01:22	96-12-8	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		08/28/18 01:22	124-48-1	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		08/28/18 01:22	106-93-4	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		08/28/18 01:22	74-95-3	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		08/28/18 01:22	95-50-1	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		08/28/18 01:22	541-73-1	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		08/28/18 01:22	106-46-7	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		08/28/18 01:22	75-71-8	
1,1-Dichloroethane	<0.27	ug/L	1.0	0.27	1		08/28/18 01:22	75-34-3	
1,2-Dichloroethane	<0.28	ug/L	1.0	0.28	1		08/28/18 01:22	107-06-2	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		08/28/18 01:22	75-35-4	
cis-1,2-Dichloroethene	<0.27	ug/L	1.0	0.27	1		08/28/18 01:22	156-59-2	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		08/28/18 01:22	156-60-5	
1,2-Dichloropropane	<0.28	ug/L	1.0	0.28	1		08/28/18 01:22	78-87-5	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		08/28/18 01:22	142-28-9	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		08/28/18 01:22	594-20-7	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		08/28/18 01:22	563-58-6	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		08/28/18 01:22	10061-01-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		08/28/18 01:22	10061-02-6	
Diisopropyl ether	<1.9	ug/L	6.3	1.9	1		08/28/18 01:22	108-20-3	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		08/28/18 01:22	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		08/28/18 01:22	87-68-3	
Isopropylbenzene (Cumene)	<0.39	ug/L	5.0	0.39	1		08/28/18 01:22	98-82-8	
p-Isopropyltoluene	<0.80	ug/L	2.7	0.80	1		08/28/18 01:22	99-87-6	
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		08/28/18 01:22	75-09-2	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		08/28/18 01:22	1634-04-4	
Naphthalene	<1.2	ug/L	5.0	1.2	1		08/28/18 01:22	91-20-3	
n-Propylbenzene	<0.81	ug/L	5.0	0.81	1		08/28/18 01:22	103-65-1	
Styrene	<0.47	ug/L	1.6	0.47	1		08/28/18 01:22	100-42-5	
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		08/28/18 01:22	630-20-6	

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ANALYTICAL RESULTS

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

Sample: LG-B-13 **Lab ID: 40174581002** Collected: 08/22/18 14:30 Received: 08/24/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Analytical Method: EPA 8260									
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		08/28/18 01:22	79-34-5	
Tetrachloroethene	<0.33	ug/L	1.1	0.33	1		08/28/18 01:22	127-18-4	
Toluene	<0.17	ug/L	5.0	0.17	1		08/28/18 01:22	108-88-3	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		08/28/18 01:22	87-61-6	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		08/28/18 01:22	120-82-1	
1,1,1-Trichloroethane	<0.24	ug/L	1.0	0.24	1		08/28/18 01:22	71-55-6	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		08/28/18 01:22	79-00-5	
Trichloroethene	<0.26	ug/L	1.0	0.26	1		08/28/18 01:22	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		08/28/18 01:22	75-69-4	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		08/28/18 01:22	96-18-4	
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		08/28/18 01:22	95-63-6	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		08/28/18 01:22	108-67-8	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		08/28/18 01:22	75-01-4	
Xylene (Total)	<1.5	ug/L	3.0	1.5	1		08/28/18 01:22	1330-20-7	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		08/28/18 01:22	179601-23-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		08/28/18 01:22	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	90	%	70-130		1		08/28/18 01:22	460-00-4	
Dibromofluoromethane (S)	102	%	70-130		1		08/28/18 01:22	1868-53-7	
Toluene-d8 (S)	102	%	70-130		1		08/28/18 01:22	2037-26-5	

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ANALYTICAL RESULTS

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

Sample: TRIP BLANK **Lab ID: 40174581003** Collected: 08/22/18 00:00 Received: 08/24/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Analytical Method: EPA 8260									
Benzene	<0.25	ug/L	1.0	0.25	1		08/28/18 00:39	71-43-2	
Bromobenzene	<0.24	ug/L	1.0	0.24	1		08/28/18 00:39	108-86-1	
Bromochloromethane	<0.36	ug/L	5.0	0.36	1		08/28/18 00:39	74-97-5	
Bromodichloromethane	<0.36	ug/L	1.2	0.36	1		08/28/18 00:39	75-27-4	
Bromoform	<4.0	ug/L	13.2	4.0	1		08/28/18 00:39	75-25-2	
Bromomethane	<0.97	ug/L	5.0	0.97	1		08/28/18 00:39	74-83-9	
n-Butylbenzene	<0.71	ug/L	2.4	0.71	1		08/28/18 00:39	104-51-8	
sec-Butylbenzene	<0.85	ug/L	5.0	0.85	1		08/28/18 00:39	135-98-8	
tert-Butylbenzene	<0.30	ug/L	1.0	0.30	1		08/28/18 00:39	98-06-6	
Carbon tetrachloride	<0.17	ug/L	1.0	0.17	1		08/28/18 00:39	56-23-5	
Chlorobenzene	<0.71	ug/L	2.4	0.71	1		08/28/18 00:39	108-90-7	
Chloroethane	<1.3	ug/L	5.0	1.3	1		08/28/18 00:39	75-00-3	
Chloroform	<1.3	ug/L	5.0	1.3	1		08/28/18 00:39	67-66-3	
Chloromethane	<2.2	ug/L	7.3	2.2	1		08/28/18 00:39	74-87-3	
2-Chlorotoluene	<0.93	ug/L	5.0	0.93	1		08/28/18 00:39	95-49-8	
4-Chlorotoluene	<0.76	ug/L	2.5	0.76	1		08/28/18 00:39	106-43-4	
1,2-Dibromo-3-chloropropane	<1.8	ug/L	5.9	1.8	1		08/28/18 00:39	96-12-8	
Dibromochloromethane	<2.6	ug/L	8.7	2.6	1		08/28/18 00:39	124-48-1	
1,2-Dibromoethane (EDB)	<0.83	ug/L	2.8	0.83	1		08/28/18 00:39	106-93-4	
Dibromomethane	<0.94	ug/L	3.1	0.94	1		08/28/18 00:39	74-95-3	
1,2-Dichlorobenzene	<0.71	ug/L	2.4	0.71	1		08/28/18 00:39	95-50-1	
1,3-Dichlorobenzene	<0.63	ug/L	2.1	0.63	1		08/28/18 00:39	541-73-1	
1,4-Dichlorobenzene	<0.94	ug/L	3.1	0.94	1		08/28/18 00:39	106-46-7	
Dichlorodifluoromethane	<0.50	ug/L	5.0	0.50	1		08/28/18 00:39	75-71-8	
1,1-Dichloroethane	<0.27	ug/L	1.0	0.27	1		08/28/18 00:39	75-34-3	
1,2-Dichloroethane	<0.28	ug/L	1.0	0.28	1		08/28/18 00:39	107-06-2	
1,1-Dichloroethene	<0.24	ug/L	1.0	0.24	1		08/28/18 00:39	75-35-4	
cis-1,2-Dichloroethene	<0.27	ug/L	1.0	0.27	1		08/28/18 00:39	156-59-2	
trans-1,2-Dichloroethene	<1.1	ug/L	3.6	1.1	1		08/28/18 00:39	156-60-5	
1,2-Dichloropropane	<0.28	ug/L	1.0	0.28	1		08/28/18 00:39	78-87-5	
1,3-Dichloropropane	<0.83	ug/L	2.8	0.83	1		08/28/18 00:39	142-28-9	
2,2-Dichloropropane	<2.3	ug/L	7.6	2.3	1		08/28/18 00:39	594-20-7	
1,1-Dichloropropene	<0.54	ug/L	1.8	0.54	1		08/28/18 00:39	563-58-6	
cis-1,3-Dichloropropene	<3.6	ug/L	12.1	3.6	1		08/28/18 00:39	10061-01-5	
trans-1,3-Dichloropropene	<4.4	ug/L	14.6	4.4	1		08/28/18 00:39	10061-02-6	
Diisopropyl ether	<1.9	ug/L	6.3	1.9	1		08/28/18 00:39	108-20-3	
Ethylbenzene	<0.22	ug/L	1.0	0.22	1		08/28/18 00:39	100-41-4	
Hexachloro-1,3-butadiene	<1.2	ug/L	5.0	1.2	1		08/28/18 00:39	87-68-3	
Isopropylbenzene (Cumene)	<0.39	ug/L	5.0	0.39	1		08/28/18 00:39	98-82-8	
p-Isopropyltoluene	<0.80	ug/L	2.7	0.80	1		08/28/18 00:39	99-87-6	
Methylene Chloride	<0.58	ug/L	5.0	0.58	1		08/28/18 00:39	75-09-2	
Methyl-tert-butyl ether	<1.2	ug/L	4.2	1.2	1		08/28/18 00:39	1634-04-4	
Naphthalene	<1.2	ug/L	5.0	1.2	1		08/28/18 00:39	91-20-3	
n-Propylbenzene	<0.81	ug/L	5.0	0.81	1		08/28/18 00:39	103-65-1	
Styrene	<0.47	ug/L	1.6	0.47	1		08/28/18 00:39	100-42-5	
1,1,1,2-Tetrachloroethane	<0.27	ug/L	1.0	0.27	1		08/28/18 00:39	630-20-6	

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ANALYTICAL RESULTS

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

Sample: TRIP BLANK		Lab ID: 40174581003		Collected: 08/22/18 00:00		Received: 08/24/18 09:20		Matrix: Water	
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV		Analytical Method: EPA 8260							
1,1,2,2-Tetrachloroethane	<0.28	ug/L	1.0	0.28	1		08/28/18 00:39	79-34-5	
Tetrachloroethene	<0.33	ug/L	1.1	0.33	1		08/28/18 00:39	127-18-4	
Toluene	<0.17	ug/L	5.0	0.17	1		08/28/18 00:39	108-88-3	
1,2,3-Trichlorobenzene	<0.63	ug/L	5.0	0.63	1		08/28/18 00:39	87-61-6	
1,2,4-Trichlorobenzene	<0.95	ug/L	5.0	0.95	1		08/28/18 00:39	120-82-1	
1,1,1-Trichloroethane	<0.24	ug/L	1.0	0.24	1		08/28/18 00:39	71-55-6	
1,1,2-Trichloroethane	<0.55	ug/L	5.0	0.55	1		08/28/18 00:39	79-00-5	
Trichloroethene	<0.26	ug/L	1.0	0.26	1		08/28/18 00:39	79-01-6	
Trichlorofluoromethane	<0.21	ug/L	1.0	0.21	1		08/28/18 00:39	75-69-4	
1,2,3-Trichloropropane	<0.59	ug/L	5.0	0.59	1		08/28/18 00:39	96-18-4	
1,2,4-Trimethylbenzene	<0.84	ug/L	2.8	0.84	1		08/28/18 00:39	95-63-6	
1,3,5-Trimethylbenzene	<0.87	ug/L	2.9	0.87	1		08/28/18 00:39	108-67-8	
Vinyl chloride	<0.17	ug/L	1.0	0.17	1		08/28/18 00:39	75-01-4	
Xylene (Total)	<1.5	ug/L	3.0	1.5	1		08/28/18 00:39	1330-20-7	
m&p-Xylene	<0.47	ug/L	2.0	0.47	1		08/28/18 00:39	179601-23-1	
o-Xylene	<0.26	ug/L	1.0	0.26	1		08/28/18 00:39	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	88	%	70-130		1		08/28/18 00:39	460-00-4	
Dibromofluoromethane (S)	104	%	70-130		1		08/28/18 00:39	1868-53-7	
Toluene-d8 (S)	101	%	70-130		1		08/28/18 00:39	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

QC Batch:	298275	Analysis Method:	EPA 8260
QC Batch Method:	EPA 8260	Analysis Description:	8260 MSV
Associated Lab Samples: 40174581001, 40174581002, 40174581003			

METHOD BLANK: 1742246 Matrix: Water

Associated Lab Samples: 40174581001, 40174581002, 40174581003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	<0.27	1.0	08/27/18 15:21	
1,1,1-Trichloroethane	ug/L	<0.24	1.0	08/27/18 15:21	
1,1,2,2-Tetrachloroethane	ug/L	<0.28	1.0	08/27/18 15:21	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	08/27/18 15:21	
1,1-Dichloroethane	ug/L	<0.27	1.0	08/27/18 15:21	
1,1-Dichloroethene	ug/L	<0.24	1.0	08/27/18 15:21	
1,1-Dichloropropene	ug/L	<0.54	1.8	08/27/18 15:21	
1,2,3-Trichlorobenzene	ug/L	<0.63	5.0	08/27/18 15:21	
1,2,3-Trichloropropane	ug/L	<0.59	5.0	08/27/18 15:21	
1,2,4-Trichlorobenzene	ug/L	<0.95	5.0	08/27/18 15:21	
1,2,4-Trimethylbenzene	ug/L	<0.84	2.8	08/27/18 15:21	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	08/27/18 15:21	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	08/27/18 15:21	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	08/27/18 15:21	
1,2-Dichloroethane	ug/L	<0.28	1.0	08/27/18 15:21	
1,2-Dichloropropane	ug/L	<0.28	1.0	08/27/18 15:21	
1,3,5-Trimethylbenzene	ug/L	<0.87	2.9	08/27/18 15:21	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	08/27/18 15:21	
1,3-Dichloropropane	ug/L	<0.83	2.8	08/27/18 15:21	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	08/27/18 15:21	
2,2-Dichloropropane	ug/L	<2.3	7.6	08/27/18 15:21	
2-Chlorotoluene	ug/L	<0.93	5.0	08/27/18 15:21	
4-Chlorotoluene	ug/L	<0.76	2.5	08/27/18 15:21	
Benzene	ug/L	<0.25	1.0	08/27/18 15:21	
Bromobenzene	ug/L	<0.24	1.0	08/27/18 15:21	
Bromochloromethane	ug/L	<0.36	5.0	08/27/18 15:21	
Bromodichloromethane	ug/L	<0.36	1.2	08/27/18 15:21	
Bromoform	ug/L	<4.0	13.2	08/27/18 15:21	
Bromomethane	ug/L	<0.97	5.0	08/27/18 15:21	
Carbon tetrachloride	ug/L	<0.17	1.0	08/27/18 15:21	
Chlorobenzene	ug/L	<0.71	2.4	08/27/18 15:21	
Chloroethane	ug/L	<1.3	5.0	08/27/18 15:21	
Chloroform	ug/L	<1.3	5.0	08/27/18 15:21	
Chloromethane	ug/L	<2.2	7.3	08/27/18 15:21	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	08/27/18 15:21	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	08/27/18 15:21	
Dibromochloromethane	ug/L	<2.6	8.7	08/27/18 15:21	
Dibromomethane	ug/L	<0.94	3.1	08/27/18 15:21	
Dichlorodifluoromethane	ug/L	<0.50	5.0	08/27/18 15:21	
Diisopropyl ether	ug/L	<1.9	6.3	08/27/18 15:21	
Ethylbenzene	ug/L	<0.22	1.0	08/27/18 15:21	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

METHOD BLANK: 1742246

Matrix: Water

Associated Lab Samples: 40174581001, 40174581002, 40174581003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/L	<1.2	5.0	08/27/18 15:21	
Isopropylbenzene (Cumene)	ug/L	<0.39	5.0	08/27/18 15:21	
m&p-Xylene	ug/L	<0.47	2.0	08/27/18 15:21	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	08/27/18 15:21	
Methylene Chloride	ug/L	<0.58	5.0	08/27/18 15:21	
n-Butylbenzene	ug/L	<0.71	2.4	08/27/18 15:21	
n-Propylbenzene	ug/L	<0.81	5.0	08/27/18 15:21	
Naphthalene	ug/L	<1.2	5.0	08/27/18 15:21	
o-Xylene	ug/L	<0.26	1.0	08/27/18 15:21	
p-Isopropyltoluene	ug/L	<0.80	2.7	08/27/18 15:21	
sec-Butylbenzene	ug/L	<0.85	5.0	08/27/18 15:21	
Styrene	ug/L	<0.47	1.6	08/27/18 15:21	
tert-Butylbenzene	ug/L	<0.30	1.0	08/27/18 15:21	
Tetrachloroethene	ug/L	<0.33	1.1	08/27/18 15:21	
Toluene	ug/L	<0.17	5.0	08/27/18 15:21	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	08/27/18 15:21	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	08/27/18 15:21	
Trichloroethene	ug/L	<0.26	1.0	08/27/18 15:21	
Trichlorofluoromethane	ug/L	<0.21	1.0	08/27/18 15:21	
Vinyl chloride	ug/L	<0.17	1.0	08/27/18 15:21	
Xylene (Total)	ug/L	<1.5	3.0	08/27/18 15:21	
4-Bromofluorobenzene (S)	%	88	70-130	08/27/18 15:21	
Dibromofluoromethane (S)	%	100	70-130	08/27/18 15:21	
Toluene-d8 (S)	%	101	70-130	08/27/18 15:21	

LABORATORY CONTROL SAMPLE: 1742247

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	54.1	108	70-133	
1,1,2,2-Tetrachloroethane	ug/L	50	58.3	117	67-130	
1,1,2-Trichloroethane	ug/L	50	59.3	119	70-130	
1,1-Dichloroethane	ug/L	50	50.0	100	70-134	
1,1-Dichloroethene	ug/L	50	52.4	105	75-132	
1,2,4-Trichlorobenzene	ug/L	50	52.1	104	68-130	
1,2-Dibromo-3-chloropropane	ug/L	50	57.4	115	60-126	
1,2-Dibromoethane (EDB)	ug/L	50	55.5	111	70-130	
1,2-Dichlorobenzene	ug/L	50	52.2	104	70-130	
1,2-Dichloroethane	ug/L	50	58.2	116	73-134	
1,2-Dichloropropane	ug/L	50	57.9	116	79-128	
1,3-Dichlorobenzene	ug/L	50	51.3	103	70-130	
1,4-Dichlorobenzene	ug/L	50	51.9	104	70-130	
Benzene	ug/L	50	56.9	114	69-137	
Bromodichloromethane	ug/L	50	56.0	112	70-130	
Bromoform	ug/L	50	50.3	101	64-133	

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QUALITY CONTROL DATA

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

LABORATORY CONTROL SAMPLE: 1742247

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/L	50	28.6	57	29-123	
Carbon tetrachloride	ug/L	50	52.8	106	73-142	
Chlorobenzene	ug/L	50	54.9	110	70-130	
Chloroethane	ug/L	50	46.5	93	59-133	
Chloroform	ug/L	50	56.7	113	80-129	
Chloromethane	ug/L	50	46.9	94	27-125	
cis-1,2-Dichloroethene	ug/L	50	53.7	107	70-134	
cis-1,3-Dichloropropene	ug/L	50	55.5	111	70-130	
Dibromochloromethane	ug/L	50	54.2	108	70-130	
Dichlorodifluoromethane	ug/L	50	39.6	79	12-127	
Ethylbenzene	ug/L	50	58.1	116	86-127	
Isopropylbenzene (Cumene)	ug/L	50	58.8	118	70-130	
m&p-Xylene	ug/L	100	115	115	70-131	
Methyl-tert-butyl ether	ug/L	50	44.6	89	65-136	
Methylene Chloride	ug/L	50	48.1	96	72-133	
o-Xylene	ug/L	50	55.5	111	70-130	
Styrene	ug/L	50	57.7	115	70-130	
Tetrachloroethene	ug/L	50	53.2	106	70-130	
Toluene	ug/L	50	56.1	112	84-124	
trans-1,2-Dichloroethene	ug/L	50	51.3	103	70-133	
trans-1,3-Dichloropropene	ug/L	50	65.0	130	67-130	
Trichloroethene	ug/L	50	55.4	111	70-130	
Trichlorofluoromethane	ug/L	50	52.6	105	69-147	
Vinyl chloride	ug/L	50	45.6	91	48-134	
Xylene (Total)	ug/L	150	170	114	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Dibromofluoromethane (S)	%			100	70-130	
Toluene-d8 (S)	%			104	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1690004946 WWU SITE12.57/12.58

Pace Project No.: 40174581

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40174581001	LG-B-8	EPA 8260	298275		
40174581002	LG-B-13	EPA 8260	298275		
40174581003	TRIP BLANK	EPA 8260	298275		

REPORT OF LABORATORY ANALYSIS

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ORIGINAL
VERBODEN TOEGANG 0.0.00 14/06

Sample Preservation Receipt Form

Client Name: Kemball

Project # 40174581

All containers needing preservation have been checked and noted below: ☐ Yes ☒ No ☐ N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/Time:

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302


Page 18

Pace Lab #	Glass						Plastic						Vials					Jars			General		VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)	
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU								WPFU
001																														2.5 / 5 / 10
002																														2.5 / 5 / 10
003																														2.5 / 5 / 10
004																														2.5 / 5 / 10
005																														2.5 / 5 / 10
006																														2.5 / 5 / 10
007																														2.5 / 5 / 10
008																														2.5 / 5 / 10
009																														2.5 / 5 / 10
010																														2.5 / 5 / 10
011																														2.5 / 5 / 10
012																														2.5 / 5 / 10
013																														2.5 / 5 / 10
014																														2.5 / 5 / 10
015																														2.5 / 5 / 10
016																														2.5 / 5 / 10
017																														2.5 / 5 / 10
018																														2.5 / 5 / 10
019																														2.5 / 5 / 10
020																														2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____

Headspace in VOA Vials (>6mm): ☐ Yes ☒ No ☐ N/A *If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL clear Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH		
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI		
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			SP5T	120 mL plastic Na Thiosulfate
						ZPLC	ziploc bag
						GN:	

 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 25Apr2018
	Document No.: F-GB-C-031-Rev.07	Issuing Authority: Pace Green Bay Quality Office

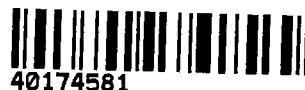
Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: Ramboll

WO#: 40174581

Courier: ☒ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Walco
☐ Client ☐ Pace Other: _____



Tracking #: _____

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - N/A Type of Ice: ☒ Wet ☐ Blue ☐ Dry ☐ None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 16.4 ICorr: _____

Temp Blank Present: ☒ yes ☐ no

Biological Tissue is Frozen: ☐ yes ☐ no

Person examining contents:

Date: 8/24/18

Initials: _____

Temp should be above freezing to 6°C.
 Biota Samples may be received at ≤ 0°C.

Chain of Custody Present: ☒ Yes ☐ No ☐ N/A

1.

Chain of Custody Filled Out: ☐ Yes ☒ No ☐ N/A

2.

Chain of Custody Relinquished: ☒ Yes ☐ No ☐ N/A

3.

Sampler Name & Signature on COC: ☒ Yes ☐ No ☐ N/A

4.

Samples Arrived within Hold Time: ☒ Yes ☐ No

5.

- VOA Samples frozen upon receipt ☐ Yes ☐ No

Date/Time: _____

Short Hold Time Analysis (<72hr): ☐ Yes ☒ No

6.

Rush Turn Around Time Requested: ☐ Yes ☒ No

7.

Sufficient Volume:

8.

For Analysis: ☒ Yes ☐ No MS/MSD: ☐ Yes ☒ No ☐ N/A

Correct Containers Used: ☒ Yes ☐ No

9.

-Pace Containers Used: ☐ Yes ☐ No ☐ N/A

-Pace IR Containers Used: ☐ Yes ☐ No ☒ N/A

Containers Intact: ☒ Yes ☐ No

10.

Filtered volume received for Dissolved tests ☐ Yes ☐ No ☒ N/A

11.

Sample Labels match COC: ☒ Yes ☐ No ☐ N/A

12.

-Includes date/time/ID/Analysis Matrix: W

Trip Blank Present: ☒ Yes ☐ No ☐ N/A

13.

Trip Blank Custody Seals Present ☒ Yes ☐ No ☐ N/A

Pace Trip Blank Lot # (if purchased): 407

Client Notification/ Resolution:

If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: 8/24/18

September 12, 2018

Donna Volk
Ramboll Environ
175 N. Corporate Dr.
Suite 160
Brookfield, WI 53045

RE: Project: 1690004946 WWU-SITE12.57/12.58
Pace Project No.: 40174947

Dear Donna Volk:

Enclosed are the analytical results for sample(s) received by the laboratory on August 30, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Steven Mleczo
steve.mleczo@pacelabs.com
(920)469-2436
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky UST Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

New York Certification #: 12064

North Dakota Certification #: R-150

Virginia VELAP ID: 460263

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

Wisconsin Certification #: 405132750

Wisconsin DATCP Certification #: 105-444

USDA Soil Permit #: P330-16-00157

Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40174947001	LG-B-17 (1-2')	Solid	08/28/18 08:20	08/30/18 10:00
40174947002	LG-B-17 (4-5')	Solid	08/28/18 08:25	08/30/18 10:00
40174947003	LG-B-17 (10-11')	Solid	08/28/18 08:30	08/30/18 10:00
40174947004	LG-B-16 (1-2')	Solid	08/28/18 08:55	08/30/18 10:00
40174947005	LG-B-16 (5-6')	Solid	08/28/18 09:00	08/30/18 10:00
40174947006	LG-B-16 (10-11')	Solid	08/28/18 09:05	08/30/18 10:00
40174947007	LG-B-15 (1-2')	Solid	08/28/18 09:25	08/30/18 10:00
40174947008	LG-B-15 (4-5')	Solid	08/28/18 09:30	08/30/18 10:00
40174947009	LG-B-15 (10-11')	Solid	08/28/18 09:40	08/30/18 10:00
40174947010	LG-B-14 (1-2')	Solid	08/28/18 10:05	08/30/18 10:00
40174947011	LG-B-14 (4-5')	Solid	08/28/18 10:10	08/30/18 10:00
40174947012	LG-B-14 (10-11')	Solid	08/28/18 10:15	08/30/18 10:00
40174947013	TRIP BLANK	Solid	08/28/18 00:00	08/30/18 10:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40174947001	LG-B-17 (1-2')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40174947002	LG-B-17 (4-5')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40174947003	LG-B-17 (10-11')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40174947004	LG-B-16 (1-2')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40174947005	LG-B-16 (5-6')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40174947006	LG-B-16 (10-11')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40174947007	LG-B-15 (1-2')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40174947008	LG-B-15 (4-5')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40174947009	LG-B-15 (10-11')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40174947010	LG-B-14 (1-2')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40174947011	LG-B-14 (4-5')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40174947012	LG-B-14 (10-11')	EPA 8260	SMT	65
		ASTM D2974-87	TEL	1
40174947013	TRIP BLANK	EPA 8260	SMT	65

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40174947001	LG-B-17 (1-2')					
ASTM D2974-87	Percent Moisture	14.9	%	0.10	09/04/18 11:01	
40174947002	LG-B-17 (4-5')					
ASTM D2974-87	Percent Moisture	20.5	%	0.10	09/04/18 11:01	
40174947003	LG-B-17 (10-11')					
EPA 8260	Tetrachloroethene	828	ug/kg	71.6	09/10/18 18:54	
EPA 8260	Trichloroethene	33.8J	ug/kg	71.6	09/10/18 18:54	
ASTM D2974-87	Percent Moisture	16.2	%	0.10	09/04/18 11:01	
40174947004	LG-B-16 (1-2')					
EPA 8260	Methylene Chloride	119	ug/kg	70.3	09/04/18 15:28	B
ASTM D2974-87	Percent Moisture	14.7	%	0.10	09/04/18 11:01	
40174947005	LG-B-16 (5-6')					
EPA 8260	Methylene Chloride	40.3J	ug/kg	71.3	09/04/18 20:37	B
EPA 8260	Tetrachloroethene	113	ug/kg	71.3	09/04/18 20:37	
ASTM D2974-87	Percent Moisture	15.9	%	0.10	09/04/18 11:01	
40174947006	LG-B-16 (10-11')					
EPA 8260	Methylene Chloride	144	ug/kg	74.6	09/04/18 15:51	B
EPA 8260	Tetrachloroethene	724	ug/kg	74.6	09/04/18 15:51	
ASTM D2974-87	Percent Moisture	19.6	%	0.10	09/04/18 11:02	
40174947007	LG-B-15 (1-2')					
EPA 8260	Methylene Chloride	66.8J	ug/kg	72.0	09/04/18 16:15	B
ASTM D2974-87	Percent Moisture	16.6	%	0.10	09/04/18 11:02	
40174947008	LG-B-15 (4-5')					
EPA 8260	Methylene Chloride	79.0	ug/kg	72.6	09/05/18 08:01	B
ASTM D2974-87	Percent Moisture	17.4	%	0.10	09/04/18 11:02	
40174947009	LG-B-15 (10-11')					
EPA 8260	Methylene Chloride	69.7	ug/kg	67.9	09/05/18 08:24	B
EPA 8260	Tetrachloroethene	166	ug/kg	67.9	09/05/18 08:24	
ASTM D2974-87	Percent Moisture	11.6	%	0.10	09/04/18 11:02	
40174947010	LG-B-14 (1-2')					
EPA 8260	Methylene Chloride	38.3J	ug/kg	71.1	09/10/18 19:17	B
ASTM D2974-87	Percent Moisture	15.7	%	0.10	09/04/18 11:02	
40174947011	LG-B-14 (4-5')					
ASTM D2974-87	Percent Moisture	19.0	%	0.10	09/04/18 11:02	
40174947012	LG-B-14 (10-11')					
EPA 8260	Methylene Chloride	30.4J	ug/kg	64.8	09/10/18 20:02	B
EPA 8260	Tetrachloroethene	729	ug/kg	64.8	09/10/18 20:02	
ASTM D2974-87	Percent Moisture	7.4	%	0.10	09/04/18 11:02	
40174947013	TRIP BLANK					
EPA 8260	Methylene Chloride	45.2J	ug/kg	60.0	09/04/18 15:05	B

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-17 (1-2') Lab ID: 40174947001 Collected: 08/28/18 08:20 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	09/07/18 09:45	09/10/18 15:13	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	09/07/18 09:45	09/10/18 15:13	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	09/07/18 09:45	09/10/18 15:13	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	09/07/18 09:45	09/10/18 15:13	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	09/07/18 09:45	09/10/18 15:13	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	09/07/18 09:45	09/10/18 15:13	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	100-42-5	W

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-17 (1-2') **Lab ID:** 40174947001 **Collected:** 08/28/18 08:20 **Received:** 08/30/18 10:00 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	09/07/18 09:45	09/10/18 15:13	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	09/07/18 09:45	09/10/18 15:13	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 15:13	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	102	%	57-148		1	09/07/18 09:45	09/10/18 15:13	1868-53-7	
Toluene-d8 (S)	110	%	58-142		1	09/07/18 09:45	09/10/18 15:13	2037-26-5	
4-Bromofluorobenzene (S)	96	%	48-130		1	09/07/18 09:45	09/10/18 15:13	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	14.9	%	0.10	0.10	1		09/04/18 11:01		

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-17 (4-5') Lab ID: 40174947002 Collected: 08/28/18 08:25 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	09/07/18 09:45	09/10/18 23:48	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	09/07/18 09:45	09/10/18 23:48	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	09/07/18 09:45	09/10/18 23:48	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	09/07/18 09:45	09/10/18 23:48	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	09/07/18 09:45	09/10/18 23:48	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	09/07/18 09:45	09/10/18 23:48	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-17 (4-5') Lab ID: 40174947002 Collected: 08/28/18 08:25 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	09/07/18 09:45	09/10/18 23:48	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	09/07/18 09:45	09/10/18 23:48	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 23:48	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	81	%	57-148		1	09/07/18 09:45	09/10/18 23:48	1868-53-7	
Toluene-d8 (S)	92	%	58-142		1	09/07/18 09:45	09/10/18 23:48	2037-26-5	
4-Bromofluorobenzene (S)	78	%	48-130		1	09/07/18 09:45	09/10/18 23:48	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	20.5	%	0.10	0.10	1		09/04/18 11:01		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-17 (10-11') Lab ID: 40174947003 Collected: 08/28/18 08:30 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	09/07/18 09:45	09/10/18 18:54	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	09/07/18 09:45	09/10/18 18:54	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	09/07/18 09:45	09/10/18 18:54	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	09/07/18 09:45	09/10/18 18:54	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	09/07/18 09:45	09/10/18 18:54	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	09/07/18 09:45	09/10/18 18:54	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	100-42-5	W

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-17 (10-11') **Lab ID:** 40174947003 **Collected:** 08/28/18 08:30 **Received:** 08/30/18 10:00 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	828	ug/kg	71.6	29.8	1	09/07/18 09:45	09/10/18 18:54	127-18-4	
Toluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	108-88-3	W
Trichloroethene	33.8J	ug/kg	71.6	29.8	1	09/07/18 09:45	09/10/18 18:54	79-01-6	
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	09/07/18 09:45	09/10/18 18:54	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	09/07/18 09:45	09/10/18 18:54	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 18:54	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	108	%	57-148		1	09/07/18 09:45	09/10/18 18:54	1868-53-7	
Toluene-d8 (S)	116	%	58-142		1	09/07/18 09:45	09/10/18 18:54	2037-26-5	
4-Bromofluorobenzene (S)	96	%	48-130		1	09/07/18 09:45	09/10/18 18:54	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	16.2	%	0.10	0.10	1		09/04/18 11:01		

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-16 (1-2') Lab ID: 40174947004 Collected: 08/28/18 08:55 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	08/31/18 10:15	09/04/18 15:28	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	08/31/18 10:15	09/04/18 15:28	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	08/31/18 10:15	09/04/18 15:28	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	08/31/18 10:15	09/04/18 15:28	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	08/31/18 10:15	09/04/18 15:28	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	1634-04-4	W
Methylene Chloride	119	ug/kg	70.3	29.3	1	08/31/18 10:15	09/04/18 15:28	75-09-2	B
Naphthalene	<40.0	ug/kg	250	40.0	1	08/31/18 10:15	09/04/18 15:28	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	100-42-5	W

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-16 (1-2') **Lab ID: 40174947004** Collected: 08/28/18 08:55 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	08/31/18 10:15	09/04/18 15:28	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	08/31/18 10:15	09/04/18 15:28	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:28	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	120	%	57-148		1	08/31/18 10:15	09/04/18 15:28	1868-53-7	
Toluene-d8 (S)	119	%	58-142		1	08/31/18 10:15	09/04/18 15:28	2037-26-5	
4-Bromofluorobenzene (S)	98	%	48-130		1	08/31/18 10:15	09/04/18 15:28	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	14.7	%	0.10	0.10	1		09/04/18 11:01		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-16 (5-6') Lab ID: 40174947005 Collected: 08/28/18 09:00 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	08/31/18 10:00	09/04/18 20:37	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	08/31/18 10:00	09/04/18 20:37	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	08/31/18 10:00	09/04/18 20:37	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	08/31/18 10:00	09/04/18 20:37	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	08/31/18 10:00	09/04/18 20:37	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	1634-04-4	W
Methylene Chloride	40.3J	ug/kg	71.3	29.7	1	08/31/18 10:00	09/04/18 20:37	75-09-2	B
Naphthalene	<40.0	ug/kg	250	40.0	1	08/31/18 10:00	09/04/18 20:37	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	100-42-5	W

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-16 (5-6') **Lab ID: 40174947005** Collected: 08/28/18 09:00 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	113	ug/kg	71.3	29.7	1	08/31/18 10:00	09/04/18 20:37	127-18-4	
Toluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	08/31/18 10:00	09/04/18 20:37	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	08/31/18 10:00	09/04/18 20:37	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:00	09/04/18 20:37	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	107	%	57-148		1	08/31/18 10:00	09/04/18 20:37	1868-53-7	
Toluene-d8 (S)	105	%	58-142		1	08/31/18 10:00	09/04/18 20:37	2037-26-5	
4-Bromofluorobenzene (S)	88	%	48-130		1	08/31/18 10:00	09/04/18 20:37	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	15.9	%	0.10	0.10	1		09/04/18 11:01		

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-16 (10-11') **Lab ID: 40174947006** Collected: 08/28/18 09:05 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	08/31/18 10:15	09/04/18 15:51	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	08/31/18 10:15	09/04/18 15:51	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	08/31/18 10:15	09/04/18 15:51	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	08/31/18 10:15	09/04/18 15:51	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	08/31/18 10:15	09/04/18 15:51	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	1634-04-4	W
Methylene Chloride	144	ug/kg	74.6	31.1	1	08/31/18 10:15	09/04/18 15:51	75-09-2	B
Naphthalene	<40.0	ug/kg	250	40.0	1	08/31/18 10:15	09/04/18 15:51	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	100-42-5	W

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-16 (10-11') **Lab ID: 40174947006** Collected: 08/28/18 09:05 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	724	ug/kg	74.6	31.1	1	08/31/18 10:15	09/04/18 15:51	127-18-4	
Toluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	08/31/18 10:15	09/04/18 15:51	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	08/31/18 10:15	09/04/18 15:51	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:51	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	115	%	57-148		1	08/31/18 10:15	09/04/18 15:51	1868-53-7	
Toluene-d8 (S)	115	%	58-142		1	08/31/18 10:15	09/04/18 15:51	2037-26-5	
4-Bromofluorobenzene (S)	92	%	48-130		1	08/31/18 10:15	09/04/18 15:51	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	19.6	%	0.10	0.10	1		09/04/18 11:02		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-15 (1-2') Lab ID: 40174947007 Collected: 08/28/18 09:25 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	08/31/18 10:15	09/04/18 16:15	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	08/31/18 10:15	09/04/18 16:15	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	08/31/18 10:15	09/04/18 16:15	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	08/31/18 10:15	09/04/18 16:15	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	08/31/18 10:15	09/04/18 16:15	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	1634-04-4	W
Methylene Chloride	66.8J	ug/kg	72.0	30.0	1	08/31/18 10:15	09/04/18 16:15	75-09-2	B
Naphthalene	<40.0	ug/kg	250	40.0	1	08/31/18 10:15	09/04/18 16:15	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-15 (1-2') **Lab ID: 40174947007** Collected: 08/28/18 09:25 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	08/31/18 10:15	09/04/18 16:15	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	08/31/18 10:15	09/04/18 16:15	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 16:15	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	123	%	57-148		1	08/31/18 10:15	09/04/18 16:15	1868-53-7	
Toluene-d8 (S)	120	%	58-142		1	08/31/18 10:15	09/04/18 16:15	2037-26-5	
4-Bromofluorobenzene (S)	101	%	48-130		1	08/31/18 10:15	09/04/18 16:15	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	16.6	%	0.10	0.10	1		09/04/18 11:02		

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-15 (4-5') Lab ID: 40174947008 Collected: 08/28/18 09:30 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	08/31/18 10:15	09/05/18 08:01	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	08/31/18 10:15	09/05/18 08:01	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	08/31/18 10:15	09/05/18 08:01	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	08/31/18 10:15	09/05/18 08:01	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	08/31/18 10:15	09/05/18 08:01	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	1634-04-4	W
Methylene Chloride	79.0	ug/kg	72.6	30.3	1	08/31/18 10:15	09/05/18 08:01	75-09-2	B
Naphthalene	<40.0	ug/kg	250	40.0	1	08/31/18 10:15	09/05/18 08:01	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	100-42-5	W

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-15 (4-5') Lab ID: 40174947008 Collected: 08/28/18 09:30 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	08/31/18 10:15	09/05/18 08:01	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	08/31/18 10:15	09/05/18 08:01	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:01	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	120	%	57-148		1	08/31/18 10:15	09/05/18 08:01	1868-53-7	
Toluene-d8 (S)	115	%	58-142		1	08/31/18 10:15	09/05/18 08:01	2037-26-5	
4-Bromofluorobenzene (S)	97	%	48-130		1	08/31/18 10:15	09/05/18 08:01	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	17.4	%	0.10	0.10	1		09/04/18 11:02		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-15 (10-11') Lab ID: 40174947009 Collected: 08/28/18 09:40 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	08/31/18 10:15	09/05/18 08:24	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	08/31/18 10:15	09/05/18 08:24	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	08/31/18 10:15	09/05/18 08:24	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	08/31/18 10:15	09/05/18 08:24	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	08/31/18 10:15	09/05/18 08:24	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	1634-04-4	W
Methylene Chloride	69.7	ug/kg	67.9	28.3	1	08/31/18 10:15	09/05/18 08:24	75-09-2	B
Naphthalene	<40.0	ug/kg	250	40.0	1	08/31/18 10:15	09/05/18 08:24	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-15 (10-11') **Lab ID:** 40174947009 **Collected:** 08/28/18 09:40 **Received:** 08/30/18 10:00 **Matrix:** Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	166	ug/kg	67.9	28.3	1	08/31/18 10:15	09/05/18 08:24	127-18-4	
Toluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	08/31/18 10:15	09/05/18 08:24	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	08/31/18 10:15	09/05/18 08:24	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/05/18 08:24	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	110	%	57-148		1	08/31/18 10:15	09/05/18 08:24	1868-53-7	
Toluene-d8 (S)	111	%	58-142		1	08/31/18 10:15	09/05/18 08:24	2037-26-5	
4-Bromofluorobenzene (S)	87	%	48-130		1	08/31/18 10:15	09/05/18 08:24	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	11.6	%	0.10	0.10	1		09/04/18 11:02		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-14 (1-2') Lab ID: 40174947010 Collected: 08/28/18 10:05 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	09/07/18 09:45	09/10/18 19:17	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	09/07/18 09:45	09/10/18 19:17	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	09/07/18 09:45	09/10/18 19:17	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	09/07/18 09:45	09/10/18 19:17	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	09/07/18 09:45	09/10/18 19:17	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	1634-04-4	W
Methylene Chloride	38.3J	ug/kg	71.1	29.6	1	09/07/18 09:45	09/10/18 19:17	75-09-2	B
Naphthalene	<40.0	ug/kg	250	40.0	1	09/07/18 09:45	09/10/18 19:17	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	100-42-5	W

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-14 (1-2') **Lab ID: 40174947010** Collected: 08/28/18 10:05 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	09/07/18 09:45	09/10/18 19:17	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	09/07/18 09:45	09/10/18 19:17	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:17	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	103	%	57-148		1	09/07/18 09:45	09/10/18 19:17	1868-53-7	
Toluene-d8 (S)	108	%	58-142		1	09/07/18 09:45	09/10/18 19:17	2037-26-5	
4-Bromofluorobenzene (S)	93	%	48-130		1	09/07/18 09:45	09/10/18 19:17	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	15.7	%	0.10	0.10	1		09/04/18 11:02		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-14 (4-5') Lab ID: 40174947011 Collected: 08/28/18 10:10 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	09/07/18 09:45	09/10/18 19:40	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	09/07/18 09:45	09/10/18 19:40	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	09/07/18 09:45	09/10/18 19:40	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	09/07/18 09:45	09/10/18 19:40	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	09/07/18 09:45	09/10/18 19:40	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	1634-04-4	W
Methylene Chloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	75-09-2	W
Naphthalene	<40.0	ug/kg	250	40.0	1	09/07/18 09:45	09/10/18 19:40	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-14 (4-5') Lab ID: 40174947011 Collected: 08/28/18 10:10 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	09/07/18 09:45	09/10/18 19:40	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	09/07/18 09:45	09/10/18 19:40	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 19:40	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	96	%	57-148		1	09/07/18 09:45	09/10/18 19:40	1868-53-7	
Toluene-d8 (S)	99	%	58-142		1	09/07/18 09:45	09/10/18 19:40	2037-26-5	
4-Bromofluorobenzene (S)	86	%	48-130		1	09/07/18 09:45	09/10/18 19:40	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	19.0	%	0.10	0.10	1		09/04/18 11:02		

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-14 (10-11') **Lab ID: 40174947012** Collected: 08/28/18 10:15 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	09/07/18 09:45	09/10/18 20:02	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	09/07/18 09:45	09/10/18 20:02	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	09/07/18 09:45	09/10/18 20:02	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	09/07/18 09:45	09/10/18 20:02	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	09/07/18 09:45	09/10/18 20:02	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	1634-04-4	W
Methylene Chloride	30.4J	ug/kg	64.8	27.0	1	09/07/18 09:45	09/10/18 20:02	75-09-2	B
Naphthalene	<40.0	ug/kg	250	40.0	1	09/07/18 09:45	09/10/18 20:02	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	100-42-5	W

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: LG-B-14 (10-11') **Lab ID: 40174947012** Collected: 08/28/18 10:15 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	729	ug/kg	64.8	27.0	1	09/07/18 09:45	09/10/18 20:02	127-18-4	
Toluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	09/07/18 09:45	09/10/18 20:02	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	09/07/18 09:45	09/10/18 20:02	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	09/07/18 09:45	09/10/18 20:02	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	95	%	57-148		1	09/07/18 09:45	09/10/18 20:02	1868-53-7	
Toluene-d8 (S)	101	%	58-142		1	09/07/18 09:45	09/10/18 20:02	2037-26-5	
4-Bromofluorobenzene (S)	85	%	48-130		1	09/07/18 09:45	09/10/18 20:02	460-00-4	
Percent Moisture Analytical Method: ASTM D2974-87									
Percent Moisture	7.4	%	0.10	0.10	1		09/04/18 11:02		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: TRIP BLANK Lab ID: 40174947013 Collected: 08/28/18 00:00 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
1,1,1,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	630-20-6	W
1,1,1-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	71-55-6	W
1,1,2,2-Tetrachloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	79-34-5	W
1,1,2-Trichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	79-00-5	W
1,1-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	75-34-3	W
1,1-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	75-35-4	W
1,1-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	563-58-6	W
1,2,3-Trichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	87-61-6	W
1,2,3-Trichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	96-18-4	W
1,2,4-Trichlorobenzene	<47.6	ug/kg	250	47.6	1	08/31/18 10:15	09/04/18 15:05	120-82-1	W
1,2,4-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	95-63-6	W
1,2-Dibromo-3-chloropropane	<91.2	ug/kg	250	91.2	1	08/31/18 10:15	09/04/18 15:05	96-12-8	W
1,2-Dibromoethane (EDB)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	106-93-4	W
1,2-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	95-50-1	W
1,2-Dichloroethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	107-06-2	W
1,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	78-87-5	W
1,3,5-Trimethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	108-67-8	W
1,3-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	541-73-1	W
1,3-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	142-28-9	W
1,4-Dichlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	106-46-7	W
2,2-Dichloropropane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	594-20-7	W
2-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	95-49-8	W
4-Chlorotoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	106-43-4	W
Benzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	71-43-2	W
Bromobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	108-86-1	W
Bromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	74-97-5	W
Bromodichloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	75-27-4	W
Bromoform	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	75-25-2	W
Bromomethane	<69.9	ug/kg	250	69.9	1	08/31/18 10:15	09/04/18 15:05	74-83-9	W
Carbon tetrachloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	56-23-5	W
Chlorobenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	108-90-7	W
Chloroethane	<67.0	ug/kg	250	67.0	1	08/31/18 10:15	09/04/18 15:05	75-00-3	W
Chloroform	<46.4	ug/kg	250	46.4	1	08/31/18 10:15	09/04/18 15:05	67-66-3	W
Chloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	74-87-3	W
Dibromochloromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	124-48-1	W
Dibromomethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	74-95-3	W
Dichlorodifluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	75-71-8	W
Diisopropyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	108-20-3	W
Ethylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	100-41-4	W
Hexachloro-1,3-butadiene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	87-68-3	W
Isopropylbenzene (Cumene)	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	98-82-8	W
Methyl-tert-butyl ether	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	1634-04-4	W
Methylene Chloride	45.2J	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	75-09-2	B
Naphthalene	<40.0	ug/kg	250	40.0	1	08/31/18 10:15	09/04/18 15:05	91-20-3	W
Styrene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	100-42-5	W

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Sample: TRIP BLANK **Lab ID: 40174947013** Collected: 08/28/18 00:00 Received: 08/30/18 10:00 Matrix: Solid

Results reported on a "wet-weight" basis

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Med Level Normal List Analytical Method: EPA 8260 Preparation Method: EPA 5035/5030B									
Tetrachloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	127-18-4	W
Toluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	108-88-3	W
Trichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	79-01-6	W
Trichlorofluoromethane	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	75-69-4	W
Vinyl chloride	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	75-01-4	W
Xylene (Total)	<75.0	ug/kg	180	75.0	1	08/31/18 10:15	09/04/18 15:05	1330-20-7	W
cis-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	156-59-2	W
cis-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	10061-01-5	W
m&p-Xylene	<50.0	ug/kg	120	50.0	1	08/31/18 10:15	09/04/18 15:05	179601-23-1	W
n-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	104-51-8	W
n-Propylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	103-65-1	W
o-Xylene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	95-47-6	W
p-Isopropyltoluene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	99-87-6	W
sec-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	135-98-8	W
tert-Butylbenzene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	98-06-6	W
trans-1,2-Dichloroethene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	156-60-5	W
trans-1,3-Dichloropropene	<25.0	ug/kg	60.0	25.0	1	08/31/18 10:15	09/04/18 15:05	10061-02-6	W
Surrogates									
Dibromofluoromethane (S)	107	%	57-148		1	08/31/18 10:15	09/04/18 15:05	1868-53-7	
Toluene-d8 (S)	109	%	58-142		1	08/31/18 10:15	09/04/18 15:05	2037-26-5	
4-Bromofluorobenzene (S)	94	%	48-130		1	08/31/18 10:15	09/04/18 15:05	460-00-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

QC Batch: 298930

Analysis Method: EPA 8260

QC Batch Method: EPA 5035/5030B

Analysis Description: 8260 MSV Med Level Normal List

Associated Lab Samples: 40174947005

METHOD BLANK: 1745543

Matrix: Solid

Associated Lab Samples: 40174947005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	<13.7	50.0	09/04/18 08:39	
1,1,1-Trichloroethane	ug/kg	<14.4	50.0	09/04/18 08:39	
1,1,2,2-Tetrachloroethane	ug/kg	<17.5	50.0	09/04/18 08:39	
1,1,2-Trichloroethane	ug/kg	<20.2	50.0	09/04/18 08:39	
1,1-Dichloroethane	ug/kg	<17.6	50.0	09/04/18 08:39	
1,1-Dichloroethene	ug/kg	<17.6	50.0	09/04/18 08:39	
1,1-Dichloropropene	ug/kg	<14.0	50.0	09/04/18 08:39	
1,2,3-Trichlorobenzene	ug/kg	20.9J	50.0	09/04/18 08:39	
1,2,3-Trichloropropane	ug/kg	<22.3	50.0	09/04/18 08:39	
1,2,4-Trichlorobenzene	ug/kg	<47.6	250	09/04/18 08:39	
1,2,4-Trimethylbenzene	ug/kg	<12.2	50.0	09/04/18 08:39	
1,2-Dibromo-3-chloropropane	ug/kg	<91.2	250	09/04/18 08:39	
1,2-Dibromoethane (EDB)	ug/kg	<14.7	50.0	09/04/18 08:39	
1,2-Dichlorobenzene	ug/kg	<16.2	50.0	09/04/18 08:39	
1,2-Dichloroethane	ug/kg	<15.0	50.0	09/04/18 08:39	
1,2-Dichloropropane	ug/kg	<16.8	50.0	09/04/18 08:39	
1,3,5-Trimethylbenzene	ug/kg	<14.5	50.0	09/04/18 08:39	
1,3-Dichlorobenzene	ug/kg	<13.2	50.0	09/04/18 08:39	
1,3-Dichloropropane	ug/kg	<12.0	50.0	09/04/18 08:39	
1,4-Dichlorobenzene	ug/kg	<15.9	50.0	09/04/18 08:39	
2,2-Dichloropropane	ug/kg	<12.6	50.0	09/04/18 08:39	
2-Chlorotoluene	ug/kg	<15.8	50.0	09/04/18 08:39	
4-Chlorotoluene	ug/kg	<13.0	50.0	09/04/18 08:39	
Benzene	ug/kg	<9.2	20.0	09/04/18 08:39	
Bromobenzene	ug/kg	<20.6	50.0	09/04/18 08:39	
Bromochloromethane	ug/kg	<21.4	50.0	09/04/18 08:39	
Bromodichloromethane	ug/kg	<9.8	50.0	09/04/18 08:39	
Bromoform	ug/kg	<19.8	50.0	09/04/18 08:39	
Bromomethane	ug/kg	<69.9	250	09/04/18 08:39	
Carbon tetrachloride	ug/kg	<12.1	50.0	09/04/18 08:39	
Chlorobenzene	ug/kg	<14.8	50.0	09/04/18 08:39	
Chloroethane	ug/kg	<67.0	250	09/04/18 08:39	
Chloroform	ug/kg	<46.4	250	09/04/18 08:39	
Chloromethane	ug/kg	<20.4	50.0	09/04/18 08:39	
cis-1,2-Dichloroethene	ug/kg	<16.6	50.0	09/04/18 08:39	
cis-1,3-Dichloropropene	ug/kg	<16.6	50.0	09/04/18 08:39	
Dibromochloromethane	ug/kg	<17.9	50.0	09/04/18 08:39	
Dibromomethane	ug/kg	<19.3	50.0	09/04/18 08:39	
Dichlorodifluoromethane	ug/kg	<12.3	50.0	09/04/18 08:39	
Diisopropyl ether	ug/kg	<17.7	50.0	09/04/18 08:39	
Ethylbenzene	ug/kg	<12.4	50.0	09/04/18 08:39	

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QUALITY CONTROL DATA

Project: 1690004946 WWU-SITE12.57/12.58

Method Project No.: 40174947

METHOD BLANK: 1745543

Matrix: Solid

Associated Lab Samples: 40174947005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/kg	<24.5	50.0	09/04/18 08:39	
Isopropylbenzene (Cumene)	ug/kg	<12.6	50.0	09/04/18 08:39	
m&p-Xylene	ug/kg	<34.4	100	09/04/18 08:39	
Methyl-tert-butyl ether	ug/kg	<12.7	50.0	09/04/18 08:39	
Methylene Chloride	ug/kg	30.4J	50.0	09/04/18 08:39	
n-Butylbenzene	ug/kg	<10.5	50.0	09/04/18 08:39	
n-Propylbenzene	ug/kg	<11.6	50.0	09/04/18 08:39	
Naphthalene	ug/kg	<40.0	250	09/04/18 08:39	
o-Xylene	ug/kg	<14.0	50.0	09/04/18 08:39	
p-Isopropyltoluene	ug/kg	<12.0	50.0	09/04/18 08:39	
sec-Butylbenzene	ug/kg	<11.9	50.0	09/04/18 08:39	
Styrene	ug/kg	<9.0	50.0	09/04/18 08:39	
tert-Butylbenzene	ug/kg	<9.5	50.0	09/04/18 08:39	
Tetrachloroethene	ug/kg	<12.9	50.0	09/04/18 08:39	
Toluene	ug/kg	<11.2	50.0	09/04/18 08:39	
trans-1,2-Dichloroethene	ug/kg	<16.5	50.0	09/04/18 08:39	
trans-1,3-Dichloropropene	ug/kg	<14.4	50.0	09/04/18 08:39	
Trichloroethene	ug/kg	<23.6	50.0	09/04/18 08:39	
Trichlorofluoromethane	ug/kg	<24.7	50.0	09/04/18 08:39	
Vinyl chloride	ug/kg	<21.1	50.0	09/04/18 08:39	
Xylene (Total)	ug/kg	<48.4	150	09/04/18 08:39	
4-Bromofluorobenzene (S)	%	90	48-130	09/04/18 08:39	
Dibromofluoromethane (S)	%	106	57-148	09/04/18 08:39	
Toluene-d8 (S)	%	104	58-142	09/04/18 08:39	

LABORATORY CONTROL SAMPLE: 1745544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/kg	2500	2440	97	70-130	
1,1,2,2-Tetrachloroethane	ug/kg	2500	2150	86	68-130	
1,1,2-Trichloroethane	ug/kg	2500	2310	92	70-130	
1,1-Dichloroethane	ug/kg	2500	2530	101	67-132	
1,1-Dichloroethene	ug/kg	2500	2410	96	67-128	
1,2,4-Trichlorobenzene	ug/kg	2500	2380	95	51-131	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2050	82	49-117	
1,2-Dibromoethane (EDB)	ug/kg	2500	2590	104	70-130	
1,2-Dichlorobenzene	ug/kg	2500	2310	93	70-130	
1,2-Dichloroethane	ug/kg	2500	2460	98	65-137	
1,2-Dichloropropane	ug/kg	2500	2340	94	75-126	
1,3-Dichlorobenzene	ug/kg	2500	2370	95	70-130	
1,4-Dichlorobenzene	ug/kg	2500	2330	93	70-130	
Benzene	ug/kg	2500	2450	98	70-130	
Bromodichloromethane	ug/kg	2500	2390	95	70-130	
Bromoform	ug/kg	2500	2080	83	57-117	

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QUALITY CONTROL DATA

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

LABORATORY CONTROL SAMPLE: 1745544

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/kg	2500	2640	106	48-135	
Carbon tetrachloride	ug/kg	2500	2480	99	65-133	
Chlorobenzene	ug/kg	2500	2430	97	70-130	
Chloroethane	ug/kg	2500	2310	92	37-165	
Chloroform	ug/kg	2500	2470	99	72-126	
Chloromethane	ug/kg	2500	1820	73	34-120	
cis-1,2-Dichloroethene	ug/kg	2500	2420	97	70-130	
cis-1,3-Dichloropropene	ug/kg	2500	2310	93	69-130	
Dibromochloromethane	ug/kg	2500	2480	99	68-130	
Dichlorodifluoromethane	ug/kg	2500	1320	53	22-100	
Ethylbenzene	ug/kg	2500	2350	94	79-121	
Isopropylbenzene (Cumene)	ug/kg	2500	2240	90	70-130	
m&p-Xylene	ug/kg	5000	4640	93	70-130	
Methyl-tert-butyl ether	ug/kg	2500	2180	87	66-129	
Methylene Chloride	ug/kg	2500	2390	96	68-129	
o-Xylene	ug/kg	2500	2360	94	70-130	
Styrene	ug/kg	2500	2400	96	70-130	
Tetrachloroethene	ug/kg	2500	2590	104	70-130	
Toluene	ug/kg	2500	2390	96	80-123	
trans-1,2-Dichloroethene	ug/kg	2500	2470	99	70-130	
trans-1,3-Dichloropropene	ug/kg	2500	2330	93	67-130	
Trichloroethene	ug/kg	2500	2460	99	70-130	
Trichlorofluoromethane	ug/kg	2500	2490	100	64-134	
Vinyl chloride	ug/kg	2500	1960	78	52-122	
Xylene (Total)	ug/kg	7500	7000	93	70-130	
4-Bromofluorobenzene (S)	%			92	48-130	
Dibromofluoromethane (S)	%			103	57-148	
Toluene-d8 (S)	%			100	58-142	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1745545 1745546

Parameter	Units	10445283009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/kg	ND	1400	1400	1160	1430	82	102	62-130	21	20	R1
1,1,2,2-Tetrachloroethane	ug/kg	ND	1400	1400	1110	1260	79	90	64-137	13	20	
1,1,2-Trichloroethane	ug/kg	ND	1400	1400	1050	1360	75	97	70-130	25	20	R1
1,1-Dichloroethane	ug/kg	ND	1400	1400	1150	1480	82	105	65-132	25	20	R1
1,1-Dichloroethene	ug/kg	ND	1400	1400	1090	1320	78	94	50-128	19	21	
1,2,4-Trichlorobenzene	ug/kg	ND	1400	1400	1670	1860	118	132	51-148	11	20	
1,2-Dibromo-3-chloropropane	ug/kg	ND	1400	1400	1400	1600	100	114	43-134	13	23	
1,2-Dibromoethane (EDB)	ug/kg	ND	1400	1400	1170	1430	84	102	70-130	20	20	
1,2-Dichlorobenzene	ug/kg	ND	1400	1400	1330	1680	95	119	70-130	23	20	R1
1,2-Dichloroethane	ug/kg	ND	1400	1400	1120	1420	80	101	65-139	24	20	R1
1,2-Dichloropropane	ug/kg	ND	1400	1400	1040	1280	74	91	74-128	21	20	R1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1745545 1745546											
Parameter	Units	10445283009		MS	MSD	MS		MSD	% Rec	Max	
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD RPD
1,3-Dichlorobenzene	ug/kg	ND	1400	1400	1400	1410	1660	100	118	70-130	17 20
1,4-Dichlorobenzene	ug/kg	ND	1400	1400	1400	1340	1590	96	113	70-130	17 20
Benzene	ug/kg	ND	1400	1400	1400	1110	1380	79	98	66-132	22 20 R1
Bromodichloromethane	ug/kg	ND	1400	1400	1400	1060	1290	75	92	69-130	20 20
Bromoform	ug/kg	ND	1400	1400	1400	1090	1320	77	94	57-130	19 20
Bromomethane	ug/kg	ND	1400	1400	1400	1120	1360	80	97	34-145	19 20
Carbon tetrachloride	ug/kg	ND	1400	1400	1400	1160	1510	83	108	54-133	26 20 R1
Chlorobenzene	ug/kg	ND	1400	1400	1400	1160	1370	83	97	70-130	16 20
Chloroethane	ug/kg	ND	1400	1400	1400	1150	1470	82	105	33-165	24 20 R1
Chloroform	ug/kg	ND	1400	1400	1400	1150	1450	82	103	72-128	23 20 R1
Chloromethane	ug/kg	ND	1400	1400	1400	770	960	55	68	20-120	22 20 R1
cis-1,2-Dichloroethene	ug/kg	ND	1400	1400	1400	1170	1430	83	102	69-130	20 20
cis-1,3-Dichloropropene	ug/kg	ND	1400	1400	1400	974	1170	69	84	65-130	19 20
Dibromochloromethane	ug/kg	ND	1400	1400	1400	1070	1400	77	100	65-130	27 20 R1
Dichlorodifluoromethane	ug/kg	ND	1400	1400	1400	717	893	51	64	10-109	22 29
Ethylbenzene	ug/kg	34.3J	1400	1400	1400	1200	1430	83	99	63-127	18 20
Isopropylbenzene (Cumene)	ug/kg	31.4J	1400	1400	1400	1180	1380	82	96	66-130	16 20
m&p-Xylene	ug/kg	ND	2810	2810	2810	2210	2730	79	97	70-130	21 20 R1
Methyl-tert-butyl ether	ug/kg	ND	1400	1400	1400	979	1240	70	88	62-135	24 20 R1
Methylene Chloride	ug/kg	91.4	1400	1400	1400	1080	1380	71	92	68-129	24 20 R1
o-Xylene	ug/kg	ND	1400	1400	1400	1120	1360	80	97	69-130	20 20
Styrene	ug/kg	ND	1400	1400	1400	1120	1330	80	94	70-130	17 20
Tetrachloroethene	ug/kg	ND	1400	1400	1400	1220	1510	87	108	70-130	21 20 R1
Toluene	ug/kg	ND	1400	1400	1400	1160	1440	82	102	80-123	21 20 R1
trans-1,2-Dichloroethene	ug/kg	ND	1400	1400	1400	1150	1480	82	105	70-130	25 20 R1
trans-1,3-Dichloropropene	ug/kg	ND	1400	1400	1400	1040	1250	74	89	67-130	18 20
Trichloroethene	ug/kg	ND	1400	1400	1400	1170	1480	83	105	70-130	24 20 R1
Trichlorofluoromethane	ug/kg	ND	1400	1400	1400	1260	1580	90	112	41-134	22 26
Vinyl chloride	ug/kg	ND	1400	1400	1400	921	1140	66	81	39-122	22 20 R1
Xylene (Total)	ug/kg	ND	4210	4210	4210	3330	4100	79	97	69-130	21 20 RS
4-Bromofluorobenzene (S)	%							87	95	48-130	
Dibromofluoromethane (S)	%							90	99	57-148	
Toluene-d8 (S)	%							91	98	58-142	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

QC Batch:	298939	Analysis Method:	EPA 8260
QC Batch Method:	EPA 5035/5030B	Analysis Description:	8260 MSV Med Level Normal List
Associated Lab Samples:	40174947004, 40174947006, 40174947007, 40174947008, 40174947009, 40174947013		

METHOD BLANK:	1745591	Matrix:	Solid
Associated Lab Samples:	40174947004, 40174947006, 40174947007, 40174947008, 40174947009, 40174947013		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	<13.7	50.0	09/04/18 08:55	
1,1,1-Trichloroethane	ug/kg	<14.4	50.0	09/04/18 08:55	
1,1,2,2-Tetrachloroethane	ug/kg	<17.5	50.0	09/04/18 08:55	
1,1,2-Trichloroethane	ug/kg	<20.2	50.0	09/04/18 08:55	
1,1-Dichloroethane	ug/kg	<17.6	50.0	09/04/18 08:55	
1,1-Dichloroethene	ug/kg	<17.6	50.0	09/04/18 08:55	
1,1-Dichloropropene	ug/kg	<14.0	50.0	09/04/18 08:55	
1,2,3-Trichlorobenzene	ug/kg	<17.0	50.0	09/04/18 08:55	
1,2,3-Trichloropropane	ug/kg	<22.3	50.0	09/04/18 08:55	
1,2,4-Trichlorobenzene	ug/kg	<47.6	250	09/04/18 08:55	
1,2,4-Trimethylbenzene	ug/kg	<12.2	50.0	09/04/18 08:55	
1,2-Dibromo-3-chloropropane	ug/kg	<91.2	250	09/04/18 08:55	
1,2-Dibromoethane (EDB)	ug/kg	<14.7	50.0	09/04/18 08:55	
1,2-Dichlorobenzene	ug/kg	<16.2	50.0	09/04/18 08:55	
1,2-Dichloroethane	ug/kg	<15.0	50.0	09/04/18 08:55	
1,2-Dichloropropane	ug/kg	<16.8	50.0	09/04/18 08:55	
1,3,5-Trimethylbenzene	ug/kg	<14.5	50.0	09/04/18 08:55	
1,3-Dichlorobenzene	ug/kg	<13.2	50.0	09/04/18 08:55	
1,3-Dichloropropane	ug/kg	<12.0	50.0	09/04/18 08:55	
1,4-Dichlorobenzene	ug/kg	<15.9	50.0	09/04/18 08:55	
2,2-Dichloropropane	ug/kg	<12.6	50.0	09/04/18 08:55	
2-Chlorotoluene	ug/kg	<15.8	50.0	09/04/18 08:55	
4-Chlorotoluene	ug/kg	<13.0	50.0	09/04/18 08:55	
Benzene	ug/kg	<9.2	20.0	09/04/18 08:55	
Bromobenzene	ug/kg	<20.6	50.0	09/04/18 08:55	
Bromochloromethane	ug/kg	<21.4	50.0	09/04/18 08:55	
Bromodichloromethane	ug/kg	<9.8	50.0	09/04/18 08:55	
Bromoform	ug/kg	<19.8	50.0	09/04/18 08:55	
Bromomethane	ug/kg	<69.9	250	09/04/18 08:55	
Carbon tetrachloride	ug/kg	<12.1	50.0	09/04/18 08:55	
Chlorobenzene	ug/kg	<14.8	50.0	09/04/18 08:55	
Chloroethane	ug/kg	<67.0	250	09/04/18 08:55	
Chloroform	ug/kg	<46.4	250	09/04/18 08:55	
Chloromethane	ug/kg	<20.4	50.0	09/04/18 08:55	
cis-1,2-Dichloroethene	ug/kg	<16.6	50.0	09/04/18 08:55	
cis-1,3-Dichloropropene	ug/kg	<16.6	50.0	09/04/18 08:55	
Dibromochloromethane	ug/kg	<17.9	50.0	09/04/18 08:55	
Dibromomethane	ug/kg	<19.3	50.0	09/04/18 08:55	
Dichlorodifluoromethane	ug/kg	<12.3	50.0	09/04/18 08:55	
Diisopropyl ether	ug/kg	<17.7	50.0	09/04/18 08:55	
Ethylbenzene	ug/kg	<12.4	50.0	09/04/18 08:55	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWU-SITE12.57/12.58

PACE Project No.: 40174947

METHOD BLANK: 1745591

Matrix: Solid

Associated Lab Samples: 40174947004, 40174947006, 40174947007, 40174947008, 40174947009, 40174947013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/kg	<24.5	50.0	09/04/18 08:55	
Isopropylbenzene (Cumene)	ug/kg	<12.6	50.0	09/04/18 08:55	
m&p-Xylene	ug/kg	<34.4	100	09/04/18 08:55	
Methyl-tert-butyl ether	ug/kg	<12.7	50.0	09/04/18 08:55	
Methylene Chloride	ug/kg	54.6	50.0	09/04/18 08:55	
n-Butylbenzene	ug/kg	<10.5	50.0	09/04/18 08:55	
n-Propylbenzene	ug/kg	<11.6	50.0	09/04/18 08:55	
Naphthalene	ug/kg	<40.0	250	09/04/18 08:55	
o-Xylene	ug/kg	<14.0	50.0	09/04/18 08:55	
p-Isopropyltoluene	ug/kg	<12.0	50.0	09/04/18 08:55	
sec-Butylbenzene	ug/kg	<11.9	50.0	09/04/18 08:55	
Styrene	ug/kg	<9.0	50.0	09/04/18 08:55	
tert-Butylbenzene	ug/kg	<9.5	50.0	09/04/18 08:55	
Tetrachloroethene	ug/kg	<12.9	50.0	09/04/18 08:55	
Toluene	ug/kg	<11.2	50.0	09/04/18 08:55	
trans-1,2-Dichloroethene	ug/kg	<16.5	50.0	09/04/18 08:55	
trans-1,3-Dichloropropene	ug/kg	<14.4	50.0	09/04/18 08:55	
Trichloroethene	ug/kg	<23.6	50.0	09/04/18 08:55	
Trichlorofluoromethane	ug/kg	<24.7	50.0	09/04/18 08:55	
Vinyl chloride	ug/kg	<21.1	50.0	09/04/18 08:55	
Xylene (Total)	ug/kg	<48.4	150	09/04/18 08:55	
4-Bromofluorobenzene (S)	%	92	48-130	09/04/18 08:55	
Dibromofluoromethane (S)	%	121	57-148	09/04/18 08:55	
Toluene-d8 (S)	%	114	58-142	09/04/18 08:55	

LABORATORY CONTROL SAMPLE: 1745592

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/kg	2500	2650	106	70-130	
1,1,2,2-Tetrachloroethane	ug/kg	2500	2480	99	68-130	
1,1,2-Trichloroethane	ug/kg	2500	2540	102	70-130	
1,1-Dichloroethane	ug/kg	2500	2920	117	67-132	
1,1-Dichloroethene	ug/kg	2500	2680	107	67-128	
1,2,4-Trichlorobenzene	ug/kg	2500	2090	84	51-131	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2170	87	49-117	
1,2-Dibromoethane (EDB)	ug/kg	2500	2440	98	70-130	
1,2-Dichlorobenzene	ug/kg	2500	2360	94	70-130	
1,2-Dichloroethane	ug/kg	2500	2780	111	65-137	
1,2-Dichloropropane	ug/kg	2500	2620	105	75-126	
1,3-Dichlorobenzene	ug/kg	2500	2500	100	70-130	
1,4-Dichlorobenzene	ug/kg	2500	2280	91	70-130	
Benzene	ug/kg	2500	2900	116	70-130	
Bromodichloromethane	ug/kg	2500	2360	94	70-130	
Bromoform	ug/kg	2500	2060	82	57-117	

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QUALITY CONTROL DATA

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

LABORATORY CONTROL SAMPLE: 1745592

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/kg	2500	2590	104	48-135	
Carbon tetrachloride	ug/kg	2500	2680	107	65-133	
Chlorobenzene	ug/kg	2500	2480	99	70-130	
Chloroethane	ug/kg	2500	2610	105	37-165	
Chloroform	ug/kg	2500	2810	112	72-126	
Chloromethane	ug/kg	2500	1970	79	34-120	
cis-1,2-Dichloroethene	ug/kg	2500	2780	111	70-130	
cis-1,3-Dichloropropene	ug/kg	2500	2600	104	69-130	
Dibromochloromethane	ug/kg	2500	2440	98	68-130	
Dichlorodifluoromethane	ug/kg	2500	1340	53	22-100	
Ethylbenzene	ug/kg	2500	2600	104	79-121	
Isopropylbenzene (Cumene)	ug/kg	2500	2340	94	70-130	
m&p-Xylene	ug/kg	5000	4970	99	70-130	
Methyl-tert-butyl ether	ug/kg	2500	2820	113	66-129	
Methylene Chloride	ug/kg	2500	2550	102	68-129	
o-Xylene	ug/kg	2500	2450	98	70-130	
Styrene	ug/kg	2500	2610	104	70-130	
Tetrachloroethene	ug/kg	2500	2190	88	70-130	
Toluene	ug/kg	2500	2540	101	80-123	
trans-1,2-Dichloroethene	ug/kg	2500	2540	102	70-130	
trans-1,3-Dichloropropene	ug/kg	2500	2370	95	67-130	
Trichloroethene	ug/kg	2500	2620	105	70-130	
Trichlorofluoromethane	ug/kg	2500	2280	91	64-134	
Vinyl chloride	ug/kg	2500	2250	90	52-122	
Xylene (Total)	ug/kg	7500	7420	99	70-130	
4-Bromofluorobenzene (S)	%			100	48-130	
Dibromofluoromethane (S)	%			114	57-148	
Toluene-d8 (S)	%			111	58-142	

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QUALITY CONTROL DATA

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

QC Batch:	299506	Analysis Method:	EPA 8260
QC Batch Method:	EPA 5035/5030B	Analysis Description:	8260 MSV Med Level Normal List
Associated Lab Samples:	40174947001, 40174947002, 40174947003, 40174947010, 40174947011, 40174947012		

METHOD BLANK:	1749040	Matrix:	Solid
Associated Lab Samples:	40174947001, 40174947002, 40174947003, 40174947010, 40174947011, 40174947012		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	<13.7	50.0	09/10/18 08:26	
1,1,1-Trichloroethane	ug/kg	<14.4	50.0	09/10/18 08:26	
1,1,2,2-Tetrachloroethane	ug/kg	<17.5	50.0	09/10/18 08:26	
1,1,2-Trichloroethane	ug/kg	<20.2	50.0	09/10/18 08:26	
1,1-Dichloroethane	ug/kg	<17.6	50.0	09/10/18 08:26	
1,1-Dichloroethene	ug/kg	<17.6	50.0	09/10/18 08:26	
1,1-Dichloropropene	ug/kg	<14.0	50.0	09/10/18 08:26	
1,2,3-Trichlorobenzene	ug/kg	<17.0	50.0	09/10/18 08:26	
1,2,3-Trichloropropane	ug/kg	<22.3	50.0	09/10/18 08:26	
1,2,4-Trichlorobenzene	ug/kg	<47.6	250	09/10/18 08:26	
1,2,4-Trimethylbenzene	ug/kg	<12.2	50.0	09/10/18 08:26	
1,2-Dibromo-3-chloropropane	ug/kg	<91.2	250	09/10/18 08:26	
1,2-Dibromoethane (EDB)	ug/kg	<14.7	50.0	09/10/18 08:26	
1,2-Dichlorobenzene	ug/kg	<16.2	50.0	09/10/18 08:26	
1,2-Dichloroethane	ug/kg	<15.0	50.0	09/10/18 08:26	
1,2-Dichloropropane	ug/kg	<16.8	50.0	09/10/18 08:26	
1,3,5-Trimethylbenzene	ug/kg	<14.5	50.0	09/10/18 08:26	
1,3-Dichlorobenzene	ug/kg	<13.2	50.0	09/10/18 08:26	
1,3-Dichloropropane	ug/kg	<12.0	50.0	09/10/18 08:26	
1,4-Dichlorobenzene	ug/kg	<15.9	50.0	09/10/18 08:26	
2,2-Dichloropropane	ug/kg	<12.6	50.0	09/10/18 08:26	
2-Chlorotoluene	ug/kg	<15.8	50.0	09/10/18 08:26	
4-Chlorotoluene	ug/kg	<13.0	50.0	09/10/18 08:26	
Benzene	ug/kg	<9.2	20.0	09/10/18 08:26	
Bromobenzene	ug/kg	<20.6	50.0	09/10/18 08:26	
Bromochloromethane	ug/kg	<21.4	50.0	09/10/18 08:26	
Bromodichloromethane	ug/kg	<9.8	50.0	09/10/18 08:26	
Bromoform	ug/kg	<19.8	50.0	09/10/18 08:26	
Bromomethane	ug/kg	<69.9	250	09/10/18 08:26	
Carbon tetrachloride	ug/kg	<12.1	50.0	09/10/18 08:26	
Chlorobenzene	ug/kg	<14.8	50.0	09/10/18 08:26	
Chloroethane	ug/kg	<67.0	250	09/10/18 08:26	
Chloroform	ug/kg	<46.4	250	09/10/18 08:26	
Chloromethane	ug/kg	<20.4	50.0	09/10/18 08:26	
cis-1,2-Dichloroethene	ug/kg	<16.6	50.0	09/10/18 08:26	
cis-1,3-Dichloropropene	ug/kg	<16.6	50.0	09/10/18 08:26	
Dibromochloromethane	ug/kg	<17.9	50.0	09/10/18 08:26	
Dibromomethane	ug/kg	<19.3	50.0	09/10/18 08:26	
Dichlorodifluoromethane	ug/kg	<12.3	50.0	09/10/18 08:26	
Diisopropyl ether	ug/kg	<17.7	50.0	09/10/18 08:26	
Ethylbenzene	ug/kg	<12.4	50.0	09/10/18 08:26	

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QUALITY CONTROL DATA

Project: 1690004946 WWU-SITE12.57/12.58

Match Project No.: 40174947

METHOD BLANK: 1749040

Matrix: Solid

Associated Lab Samples: 40174947001, 40174947002, 40174947003, 40174947010, 40174947011, 40174947012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/kg	<24.5	50.0	09/10/18 08:26	
Isopropylbenzene (Cumene)	ug/kg	<12.6	50.0	09/10/18 08:26	
m&p-Xylene	ug/kg	<34.4	100	09/10/18 08:26	
Methyl-tert-butyl ether	ug/kg	<12.7	50.0	09/10/18 08:26	
Methylene Chloride	ug/kg	20.1J	50.0	09/10/18 08:26	
n-Butylbenzene	ug/kg	<10.5	50.0	09/10/18 08:26	
n-Propylbenzene	ug/kg	<11.6	50.0	09/10/18 08:26	
Naphthalene	ug/kg	<40.0	250	09/10/18 08:26	
o-Xylene	ug/kg	<14.0	50.0	09/10/18 08:26	
p-Isopropyltoluene	ug/kg	<12.0	50.0	09/10/18 08:26	
sec-Butylbenzene	ug/kg	<11.9	50.0	09/10/18 08:26	
Styrene	ug/kg	<9.0	50.0	09/10/18 08:26	
tert-Butylbenzene	ug/kg	<9.5	50.0	09/10/18 08:26	
Tetrachloroethene	ug/kg	<12.9	50.0	09/10/18 08:26	
Toluene	ug/kg	<11.2	50.0	09/10/18 08:26	
trans-1,2-Dichloroethene	ug/kg	<16.5	50.0	09/10/18 08:26	
trans-1,3-Dichloropropene	ug/kg	<14.4	50.0	09/10/18 08:26	
Trichloroethene	ug/kg	<23.6	50.0	09/10/18 08:26	
Trichlorofluoromethane	ug/kg	<24.7	50.0	09/10/18 08:26	
Vinyl chloride	ug/kg	<21.1	50.0	09/10/18 08:26	
Xylene (Total)	ug/kg	<48.4	150	09/10/18 08:26	
4-Bromofluorobenzene (S)	%	85	48-130	09/10/18 08:26	
Dibromofluoromethane (S)	%	97	57-148	09/10/18 08:26	
Toluene-d8 (S)	%	101	58-142	09/10/18 08:26	

LABORATORY CONTROL SAMPLE: 1749041

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/kg	2500	2350	94	70-130	
1,1,2,2-Tetrachloroethane	ug/kg	2500	2270	91	68-130	
1,1,2-Trichloroethane	ug/kg	2500	2470	99	70-130	
1,1-Dichloroethane	ug/kg	2500	2410	96	67-132	
1,1-Dichloroethene	ug/kg	2500	2480	99	67-128	
1,2,4-Trichlorobenzene	ug/kg	2500	2160	86	51-131	
1,2-Dibromo-3-chloropropane	ug/kg	2500	2160	86	49-117	
1,2-Dibromoethane (EDB)	ug/kg	2500	2680	107	70-130	
1,2-Dichlorobenzene	ug/kg	2500	2360	94	70-130	
1,2-Dichloroethane	ug/kg	2500	2440	97	65-137	
1,2-Dichloropropane	ug/kg	2500	2400	96	75-126	
1,3-Dichlorobenzene	ug/kg	2500	2430	97	70-130	
1,4-Dichlorobenzene	ug/kg	2500	2430	97	70-130	
Benzene	ug/kg	2500	2270	91	70-130	
Bromodichloromethane	ug/kg	2500	2430	97	70-130	
Bromoform	ug/kg	2500	2180	87	57-117	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

LABORATORY CONTROL SAMPLE: 1749041

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Bromomethane	ug/kg	2500	2430	97	48-135	
Carbon tetrachloride	ug/kg	2500	2430	97	65-133	
Chlorobenzene	ug/kg	2500	2540	102	70-130	
Chloroethane	ug/kg	2500	2670	107	37-165	
Chloroform	ug/kg	2500	2300	92	72-126	
Chloromethane	ug/kg	2500	2120	85	34-120	
cis-1,2-Dichloroethene	ug/kg	2500	2290	92	70-130	
cis-1,3-Dichloropropene	ug/kg	2500	2240	90	69-130	
Dibromochloromethane	ug/kg	2500	2590	103	68-130	
Dichlorodifluoromethane	ug/kg	2500	2150	86	22-100	
Ethylbenzene	ug/kg	2500	2470	99	79-121	
Isopropylbenzene (Cumene)	ug/kg	2500	2330	93	70-130	
m&p-Xylene	ug/kg	5000	4880	98	70-130	
Methyl-tert-butyl ether	ug/kg	2500	2100	84	66-129	
Methylene Chloride	ug/kg	2500	2270	91	68-129	
o-Xylene	ug/kg	2500	2420	97	70-130	
Styrene	ug/kg	2500	2490	99	70-130	
Tetrachloroethene	ug/kg	2500	2610	105	70-130	
Toluene	ug/kg	2500	2550	102	80-123	
trans-1,2-Dichloroethene	ug/kg	2500	2270	91	70-130	
trans-1,3-Dichloropropene	ug/kg	2500	2240	90	67-130	
Trichloroethene	ug/kg	2500	2590	104	70-130	
Trichlorofluoromethane	ug/kg	2500	2870	115	64-134	
Vinyl chloride	ug/kg	2500	2290	91	52-122	
Xylene (Total)	ug/kg	7500	7290	97	70-130	
4-Bromofluorobenzene (S)	%			88	48-130	
Dibromofluoromethane (S)	%			97	57-148	
Toluene-d8 (S)	%			101	58-142	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1749042 1749043

Parameter	Units	10445880003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/kg	ND	1250	1250	1210	1150	97	92	62-130	5	20	
1,1,2,2-Tetrachloroethane	ug/kg	ND	1250	1250	1480	1210	118	97	64-137	20	20	
1,1,2-Trichloroethane	ug/kg	ND	1250	1250	1430	1540	115	123	70-130	7	20	
1,1-Dichloroethane	ug/kg	ND	1250	1250	1270	1340	102	107	65-132	5	20	
1,1-Dichloroethene	ug/kg	ND	1250	1250	1320	1110	106	89	50-128	17	21	
1,2,4-Trichlorobenzene	ug/kg	ND	1250	1250	2490	1600	199	128	51-148	43	20 M1,R1	
1,2-Dibromo-3-chloropropane	ug/kg	ND	1250	1250	1680	1050J	135	84	43-134		23 M1	
1,2-Dibromoethane (EDB)	ug/kg	ND	1250	1250	1150	1060	92	85	70-130	8	20	
1,2-Dichlorobenzene	ug/kg	ND	1250	1250	1500	1380	120	110	70-130	8	20	
1,2-Dichloroethane	ug/kg	ND	1250	1250	1350	1150	108	92	65-139	16	20	
1,2-Dichloropropane	ug/kg	ND	1250	1250	1290	1200	103	96	74-128	8	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1749042 1749043											
Parameter	Units	10445880003 Result	MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max	
			Spike Conc.	Spike Conc.						RPD	RPD
1,3-Dichlorobenzene	ug/kg	ND	1250	1250	1590	1230	128	98	70-130	26	20 R1
1,4-Dichlorobenzene	ug/kg	ND	1250	1250	1560	1330	125	106	70-130	16	20
Benzene	ug/kg	ND	1250	1250	1270	1220	101	98	66-132	3	20
Bromodichloromethane	ug/kg	ND	1250	1250	1260	1130	101	91	69-130	11	20
Bromoform	ug/kg	ND	1250	1250	2020	1950	162	156	57-130	4	20 M1
Bromomethane	ug/kg	ND	1250	1250	1640	1240J	132	99	34-145		20
Carbon tetrachloride	ug/kg	ND	1250	1250	1160	1190	93	95	54-133	2	20
Chlorobenzene	ug/kg	ND	1250	1250	1270	1270	102	102	70-130	0	20
Chloroethane	ug/kg	ND	1250	1250	1720	1490	138	119	33-165	14	20
Chloroform	ug/kg	ND	1250	1250	1270	1200J	102	96	72-128		20
Chloromethane	ug/kg	ND	1250	1250	1140	1130	91	91	20-120	1	20
cis-1,2-Dichloroethene	ug/kg	ND	1250	1250	1210	1240	97	99	69-130	2	20
cis-1,3-Dichloropropene	ug/kg	ND	1250	1250	1080	951	86	76	65-130	13	20
Dibromochloromethane	ug/kg	ND	1250	1250	1020	1020	82	82	65-130	1	20
Dichlorodifluoromethane	ug/kg	ND	1250	1250	1020	1050	81	84	10-109	3	29
Ethylbenzene	ug/kg	ND	1250	1250	1330	1200	106	96	63-127	10	20
Isopropylbenzene (Cumene)	ug/kg	ND	1250	1250	1380	1240	110	100	66-130	10	20
m&p-Xylene	ug/kg	ND	2500	2500	2720	2660	103	100	70-130	2	20
Methyl-tert-butyl ether	ug/kg	ND	1250	1250	1170	1170	93	94	62-135	0	20
Methylene Chloride	ug/kg	ND	1250	1250	1380	1390	110	111	68-129	1	20
o-Xylene	ug/kg	ND	1250	1250	1480	1340	106	94	69-130	11	20
Styrene	ug/kg	ND	1250	1250	1250	1220	100	98	70-130	3	20
Tetrachloroethene	ug/kg	ND	1250	1250	1210	1320	97	106	70-130	8	20
Toluene	ug/kg	ND	1250	1250	1330	1320	106	106	80-123	0	20
trans-1,2-Dichloroethene	ug/kg	ND	1250	1250	1310	1280	105	102	70-130	2	20
trans-1,3-Dichloropropene	ug/kg	ND	1250	1250	890	949	71	76	67-130	6	20
Trichloroethene	ug/kg	ND	1250	1250	1350	1280	108	102	70-130	5	20
Trichlorofluoromethane	ug/kg	ND	1250	1250	1520	1350	121	108	41-134	12	26
Vinyl chloride	ug/kg	ND	1250	1250	1250	1220	100	97	39-122	2	20
Xylene (Total)	ug/kg	ND	3750	3750	4210	4000	104	98	69-130	5	20
4-Bromofluorobenzene (S)	%						107	104	48-130		
Dibromofluoromethane (S)	%						101	93	57-148		1q
Toluene-d8 (S)	%						103	108	58-142		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

QC Batch:	299044	Analysis Method:	ASTM D2974-87
QC Batch Method:	ASTM D2974-87	Analysis Description:	Dry Weight/Percent Moisture
Associated Lab Samples:	40174947001, 40174947002, 40174947003, 40174947004, 40174947005, 40174947006, 40174947007, 40174947008, 40174947009, 40174947010, 40174947011, 40174947012		

SAMPLE DUPLICATE: 1746754

Parameter	Units	40174947002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	20.5	20.5	0	10	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

- | | |
|----|---|
| 1q | Sample aliquot was taken from a glass jar with head space and MeOH preserved in the laboratory. |
| B | Analyte was detected in the associated method blank. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| R1 | RPD value was outside control limits. |
| RS | The RPD value in one of the constituent analytes was outside the control limits. |
| W | Non-detect results are reported on a wet weight basis. |

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 1690004946 WWU-SITE12.57/12.58

Pace Project No.: 40174947

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40174947001	LG-B-17 (1-2')	EPA 5035/5030B	299506	EPA 8260	299507
40174947002	LG-B-17 (4-5')	EPA 5035/5030B	299506	EPA 8260	299507
40174947003	LG-B-17 (10-11')	EPA 5035/5030B	299506	EPA 8260	299507
40174947004	LG-B-16 (1-2')	EPA 5035/5030B	298939	EPA 8260	298944
40174947005	LG-B-16 (5-6')	EPA 5035/5030B	298930	EPA 8260	298932
40174947006	LG-B-16 (10-11')	EPA 5035/5030B	298939	EPA 8260	298944
40174947007	LG-B-15 (1-2')	EPA 5035/5030B	298939	EPA 8260	298944
40174947008	LG-B-15 (4-5')	EPA 5035/5030B	298939	EPA 8260	298944
40174947009	LG-B-15 (10-11')	EPA 5035/5030B	298939	EPA 8260	298944
40174947010	LG-B-14 (1-2')	EPA 5035/5030B	299506	EPA 8260	299507
40174947011	LG-B-14 (4-5')	EPA 5035/5030B	299506	EPA 8260	299507
40174947012	LG-B-14 (10-11')	EPA 5035/5030B	299506	EPA 8260	299507
40174947013	TRIP BLANK	EPA 5035/5030B	298939	EPA 8260	298944
40174947001	LG-B-17 (1-2')	ASTM D2974-87	299044		
40174947002	LG-B-17 (4-5')	ASTM D2974-87	299044		
40174947003	LG-B-17 (10-11')	ASTM D2974-87	299044		
40174947004	LG-B-16 (1-2')	ASTM D2974-87	299044		
40174947005	LG-B-16 (5-6')	ASTM D2974-87	299044		
40174947006	LG-B-16 (10-11')	ASTM D2974-87	299044		
40174947007	LG-B-15 (1-2')	ASTM D2974-87	299044		
40174947008	LG-B-15 (4-5')	ASTM D2974-87	299044		
40174947009	LG-B-15 (10-11')	ASTM D2974-87	299044		
40174947010	LG-B-14 (1-2')	ASTM D2974-87	299044		
40174947011	LG-B-14 (4-5')	ASTM D2974-87	299044		
40174947012	LG-B-14 (10-11')	ASTM D2974-87	299044		

REPORT OF LABORATORY ANALYSIS

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ORIGINAL

Client Name: Rumbeil

Sample Preservation Receipt Form

Project #

4079947All containers needing preservation have been checked and noted below: ☒ Yes ☐ No ☐ N/A

Lab Lot# of pH paper:

Lab Std #ID of preservation (if pH adjusted):

Initial when completed:

Date/Time:

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302


Page 48

Pace Lab #	Glass			Plastic			Vials			Jars		General		VOA Vials (>6mm) *				Volume (mL)														
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U		VG9H	VG9M	VG9D	JGFU	WG9U	WPFU	SP5T	ZPLC	GN	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted
001																																2.5 / 5 / 10
002																																2.5 / 5 / 10
003																																2.5 / 5 / 10
004																																2.5 / 5 / 10
005																																2.5 / 5 / 10
006																																2.5 / 5 / 10
007																																2.5 / 5 / 10
008																																2.5 / 5 / 10
009																																2.5 / 5 / 10
010																																2.5 / 5 / 10
011																																2.5 / 5 / 10
012																																2.5 / 5 / 10
013																																2.5 / 5 / 10
014																																2.5 / 5 / 10
015																																2.5 / 5 / 10
016																																2.5 / 5 / 10
017																																2.5 / 5 / 10
018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:

Headspace in VOA Vials (>6mm) : ☒ Yes ☐ No ☐ N/A *If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL clear vial Na Thio	WG9U	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH		
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	SP5T	120 mL plastic Na Thiosulfate
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			ZPLC	ziploc bag
						GN:	

 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 25Apr2018
	Document No.: F-GB-C-031-Rev.07	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Rambol

Courier: ☒ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Walco
☐ Client ☐ Pace Other: _____

Project #: _____

WO#: 40174947



40174947

Tracking #: _____

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - N/A Type of Ice: Wet Blue Dry None

☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: POT /Corr: _____

Temp Blank Present: ☐ yes ☒ no

Biological Tissue is Frozen: ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:

Date: 8/30/18

Initials: RS

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>mailto/invoice info incomplete 8/30/18</u>
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>Vial tare weights covered by client RS 8/30/18</u>
-Includes date/time/ID/Analysis Matrix: <u>S</u>		
Trip Blank Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution:

Person Contacted: _____

Date/Time: _____

If checked, see attached form for additional comments ☐

Comments/ Resolution: _____

Project Manager Review: _____

Date: 8/30/18

(NO TEXT FOR THIS PAGE)



Appendix C – Pertinent WDNR File Information



(NO TEXT FOR THIS PAGE)

Wisconsin Department of Natural Resources

Environmental Cleanup & Brownfields Redevelopment

BRRTS on the Web

Click the Location Name below to view the Location Details page for this Activity. Other Activities, if present, may be viewed from that page.

Basic Search >> 02-68-000037 Activity Details

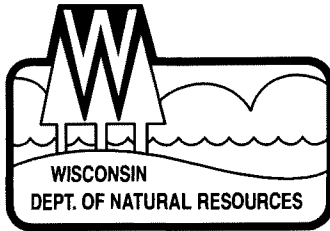
02-68-000037 AGA GAS INC						
OPEN ERP						
Location Name (Click Location Name to View Location Details)				County		WDNR Region
LINDE GAS LLC				WAUKESHA		SOUTHEAST
Address				Municipality		
309 SENTRY DR				WAUKESHA		
Public Land Survey System			Latitude	Google Maps	RR Sites Map	
NE 1/4 of the NE 1/4 of Sec 09, T06N, R19E			42.9992668	CLICK TO VIEW	CLICK TO VIEW	
Additional Location Description			Longitude	Facility ID	Size (Acres)	
			-88.2480005	268256560	UNKNOWN	
Jurisdiction	PECFA No.	EPA Cerclis ID	Start Date	End Date	Last Action	
DNR RR			1990-04-03		2014-06-10	
Characteristics						
PECFA Tracked?	EPA NPL Site?	Eligible for PECFA Funds?	Above Ground Storage Tank?	Drycleaner?	Co-Contamination?	On GIS Registry?
No	No	No	No	No	No	No
Actions						
Place Cursor Over Action Code to View Description						
Date	Code	Name	Comment			
1990-04-03	1	Notification				
1990-04-19	2	RP Letter Sent				
1990-05-14	35	Site Investigation Workplan Received (w/out Fee)	WORKPLAN REC'D			
1990-08-02	35	Site Investigation Workplan Received (w/out Fee)	REC'D MODIFIED WORKPLAN			
1991-01-29	99	Miscellaneous	REC'D TANK CLOSURE DOCS			
1992-06-09	99	Miscellaneous	REC'D SOIL REMEDIATION PLAN			
1993-08-03	99	Miscellaneous	REC'D REMEDIAL EXCAVATION AND INVESTIGATION REPORT			
1996-02-09	99	Miscellaneous	REPORT CITING OFF-SITE CONTAMINATION SOURCE			
1997-01-28	99	Miscellaneous	DNR RESPONSE REQUESTING FURTHER INFORMATION			
1998-04-08	179	Closure Review Request Received (no fee required)	JF. 8-6-98 request for off-site determination			
1998-08-06	80	Closure Not Approved				
2007-05-31	200	Push Action Taken	MD			
2007-07-06	99	Miscellaneous	REC'D LTR RE SITE UPDATE			
2007-07-31	99	Miscellaneous	REC'D LTR RE NECESSARY WORK ON SITE, MD 8/14/07			
2007-10-22	35	Site Investigation Workplan Received (w/out Fee)				
2008-02-12	137	Site Investigation Report Received with Fee	REC'D CK# 190329 \$750.00			
2008-03-19	140	Site Investigation Report Not Approved				

2009-05-01	98	Technical Assistance Provided	REC'D CK# 227179 \$500.00	
2009-05-01	97	Request for Technical Assistance Received with Fee	REC'D CK# 227179 \$500.00	
2009-06-03	99	Miscellaneous	ADDITIONAL OFF SITE DATA NEEDED	
2011-09-07	130	DNR Regulatory Reminder Sent	Vapor Intrusion (VI) Assessment Notification Ltr Sent	
Linked to Code 130: 0268000037_VI_Letter.pdf Click to Download or Open				
2012-05-07	99	Miscellaneous	OFF-SITE DATA NEEDED	
2013-03-25	99	Miscellaneous	OFF SITE NEEDED	
2014-06-10	99	Miscellaneous	OFF-SITE DATA NEEDED	
Impacts				
Type		Comment		
Groundwater Contamination		-		
Soil Contamination		-		
Vapor Intrusion Pathway (Potential)		-		
Substances				
Substance		Type	Amount Released	Units
Perchloroethylene		VOC		
Chlorinated Solvents		VOC		
Who				
Role		Name/Address		
Responsible Party		JAMES ARVIN PO BOX 94737 CLEVELAND, OH 44101		
Project Manager		MARK DREWS 141 NW BARSTOW WAUKESHA, WI 53188		
Responsible Party		AIRGAS USA LLC 6055 ROCKSIDE WOODS BL INDEPENDENCE, OH 44131		

BRRTS data comes from various sources, both internal and external to DNR. There may be omissions and errors in the data and delays in updating new information. Please see the [disclaimers page](#) for more information. We welcome your [Feedback](#).

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101 S. Webster Street . PO Box 7921 . Madison, Wisconsin 53707-7921 . 608.266.2621

Release 2.5.6 | 04/19/2017 | [Release Notes](#)



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Gloria L. McCutcheon, Regional Director

Waukesha Service Center
141 NW Barstow St
Waukesha, Wisconsin 53188
Telephone 262-574-2100
FAX 262-574-2117
TTY Access via relay - 711

June 3, 2009

The Linde Group
Dave Grupp
575 Mountain Ave.
Murray Hill, NJ 07974

FID # 268256560
BRRTS # 02-68-000037

Subject: Technical Assistance Review/Groundwater Monitoring Report
Former AGA Gas Facility, 309 Sentry Dr., Waukesha, Wisconsin

Dear Mr. Grupp:

On June 2, 2009, the Regional Closure Committee reviewed your request of the "Groundwater Monitoring Report" dated April 30, 2009 for the case described above. The Regional Closure Committee reviews environmental remediation cases for compliance with state rules and statutes to maintain consistency in the closure of these cases. After careful review of your request, the Regional Closure Committee has the following comments:

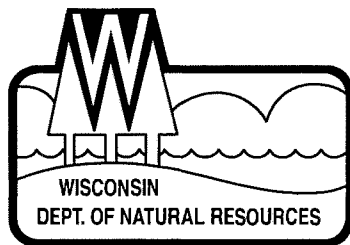
1. It appears the former AGA Gas site is not the source of the chlorinated solvents on site. However, additional information from the adjacent properties is needed to determine the source of the chlorinated solvents.
2. The Department of Natural Resources (Department) has sent a letter for additional investigation and groundwater sampling of the Magnetek property. The Department is requesting your cooperation with Magnetek if they request to sample the monitoring wells on the former AGA Gas property.
3. The Department is not requesting additional investigation or monitoring on the AGA Gas property. Once the investigation and monitoring results are received from the Magnetek property, the Department will be able to make a determination regarding closure and issuing an off-site exemption for the AGA Gas property.

We appreciate your efforts to restore the environment at this site. If you have any questions regarding this letter, please contact me at 262-574-2146 or e-mail me at Mark.Drews@Wisconsin.gov.

Sincerely,

Mark Drews, P.G.
Hydrogeologist
Bureau for Remediation & Redevelopment

cc: AECOM Environmental, Susan Petrofske, W239 N2890 Pewaukee Rd., Unit D, Pewaukee, WI 53072
SER File



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Gloria L. McCutcheon, Regional Director

Waukesha Service Center
141 NW Barstow St
Waukesha, Wisconsin 53188
Telephone 262-574-2100
FAX 262-574-2117
TTY Access via relay - 711

May 20, 2009

Magnetek, Inc.
Peter Schneider
26 Century Blvd, Suite 600
Nashville, TN 37214

FID # 268013130
BRRTS # 02-68-000243

SUBJECT: Former Magnetek, 400 S. Prairie Ave., Waukesha, WI

Dear Mr. Schneider:

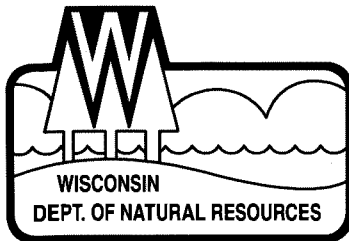
The Department is undertaking a project to address open environmental contamination sites where we have not heard from site owners or consultants in several years. We are sending letters to those property owners to determine the status of these cases and to request additional work. We appreciate your cooperation and understanding as we try to resolve these old cases. Getting your site closed and taken off the Department's data base can facilitate redevelopment and/or sale of your property.

On August 11, 2005 the Department received a groundwater monitoring summary report for the site. The Department has not received any additional information since this date. The Department has the following comments based on a review of information in the file:

1. Determine the source of chlorinated solvent contamination on site and the adjacent property to the west.
2. Provide a summary of the extents of soil and groundwater contamination on the property.
3. Implement a quarterly groundwater sampling plan for all wells on site.
4. Repair or replace monitoring wells MW-1, MW-6 and MW-10.
5. Provide an update on the status of the remediation system on site.
6. Define the horizontal and vertical extents of soil and groundwater contamination on and off site if necessary. The AGA Gas property located immediately northwest of the Former Magnetek property recently installed and sampled monitoring wells which contain tetrachloroethene and trichloroethene, you may want to use these wells as additional monitoring points.

Please submit the name, address and phone number of the environmental consultant you have retained to investigate the release at the site, along with a work plan and schedule for the investigation, within 90 days of receipt of this letter. If you have other information, such as reports or laboratory results from samples collected at the site, you should submit these as well. All applicable information should be submitted IN WRITING to:

Ms. Victoria Stovall
Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
2300 North Dr. Martin Luther King Jr. Dr.
Milwaukee, WI 53212



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary
Gloria L. McCutcheon, Regional Director

Waukesha Service Center
141 NW Barstow St
Waukesha, Wisconsin 53188
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March 19, 2008

Michael Resh
The Linde Group
575 Mountain Ave.
Murray Hill, NJ 07974

FID # 268256560
BRRTS # 02-68-000037

Subject: Supplemental Site Investigation, Former AGA Gas Facility, 309 Sentry Dr.,
Waukesha, WI

Dear Mr. Resh:

The Wisconsin Department of Natural Resources (Department) received the report "Supplemental Site Investigation Report" dated February 7, 2008 from your consultant ENSR. The Department reviews environmental remediation cases for compliance with state statutes and rules to maintain consistency in the investigation and remediation of these cases. The Department is providing the following comments to the above report:

1. Based on the information provided in the above report, the Department cannot determine the source of the chlorinated solvents in the groundwater on site. Additional information would be needed to grant an off-site exemption letter.
2. The Department agrees with the recommendations in the report to complete an additional round of groundwater sampling and complete a detailed review of Department files for possible sources of groundwater contamination.
3. The southern area of the property appears to be separate from the northern portion. Were there past uses of the property that may have included the use of chlorinated solvents?

The Department reserves the right to require additional work, both on and off the facility property, if the site investigation or remediation is insufficient. The Department appreciates the cooperation with the investigation and remediation of this site. If you have any questions regarding this letter, please contact me at 262-574-2146.

Sincerely,

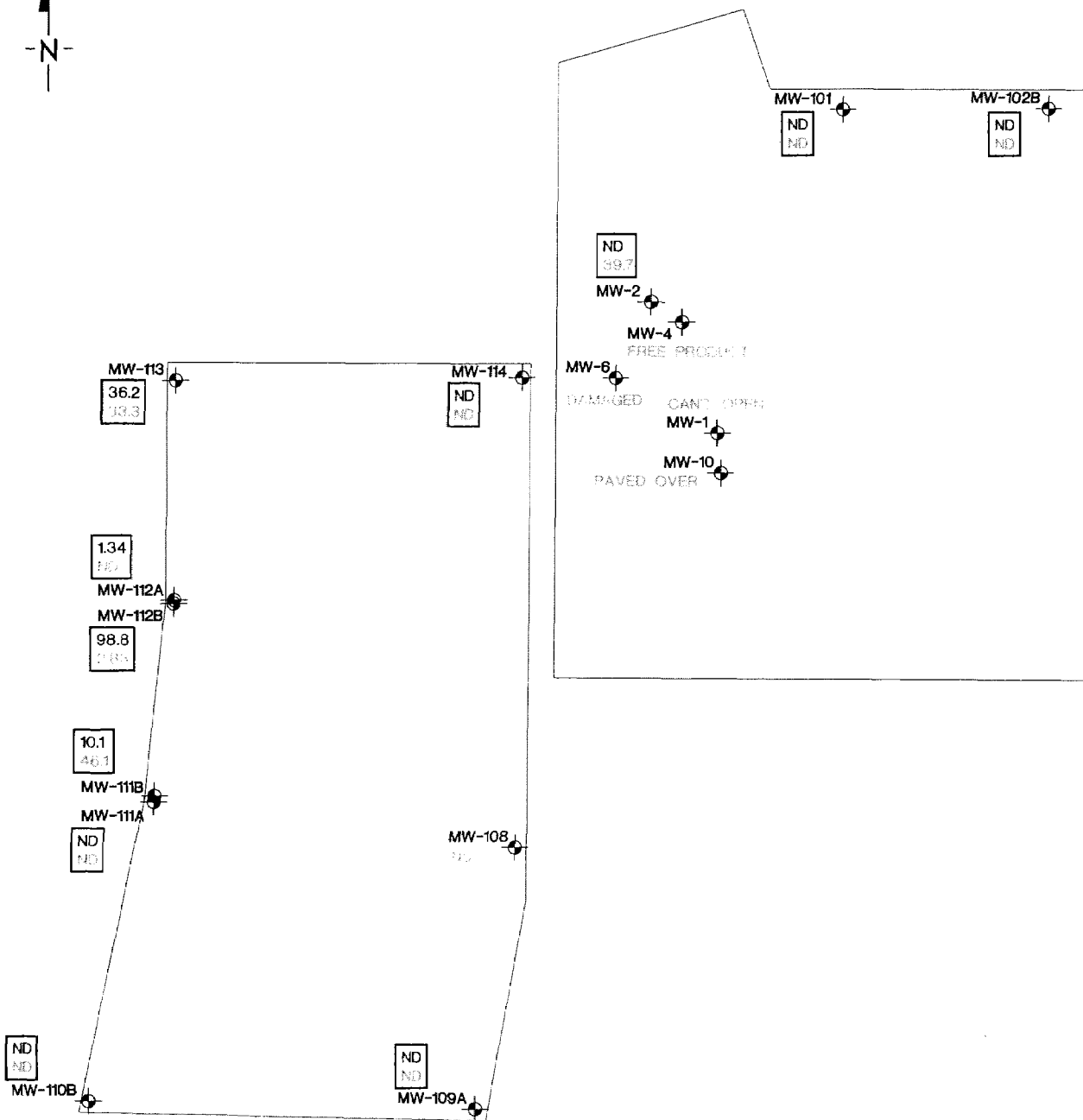
Mark Drews, P.G.

Hydrogeologist

Bureau for Remediation and Redevelopment

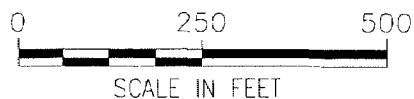
Cc: Lauren Gromoski, ENSR, W239 N2890 Pewaukee Rd., Unit D, Pewaukee, WI 53072
Bernie Malnarick, Airgas Merchant Gases, LLC, 309 Sentry Dr., Waukesha, WI 53186
Project File

(NO TEXT FOR THIS PAGE)



EXPLANATION:

- MW-112A
- MONITORING WELL LOCATION AND DESIGNATION
- 10.1
46.1
- TETRACHLOROETHENE IN ug/L
TRICHLOROETHENE IN ug/L
- ND NOT DETECTED
- NS NOT SAMPLED



PROPERTY BOUNDARIES ARE APPROXIMATE BASED ON GOLDER ASSOCIATES, 1995 FIGURE.
STATE PLANE COORDINATES OF WELLS TAKEN FROM TABLE 1, PHASE III ENVIRONMENTAL
ASSESSMENT, GOLDER ASSOCIATES, JULY 1995.

TITLE: PCE & TCE IN GROUNDWATER MAY 2005

LOCATION: FORMER MAGNETEK PROPERTY
WAUKESHA, WISCONSIN



CHECKED	HWY	FIGURE:
DRAFTED	HJW	2
PROJECT	3901.002	
DATE	6/16/05	

Table 2: Organic Compounds in Groundwater in Soccer Field Monitoring Wells

Former Magnetek Facility

Waukesha, WI

Well ID	Sample Date	Volatile Organic Compounds								Polynuclear Aromatic Hydrocarbons
		1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-dichloroethene	Naphthalene	Tetrachloroethene	1,1,1-Trichloroethane	Trichloroethene	1,2,4-Trimethylbenzene	See lab report for complete list
WDNR	PAL	85	0.7	7	8	0.5	40	0.5	96	
	ES	850	7	70	40	5	200	5	480	
MW-2	11/2/2004	<0.50	<0.50	<0.50	<0.25	<0.50	<0.50	21	<0.20	Not sampled
	5/17/2005	<0.433	<0.451	<0.378	<0.609	<0.295	<0.441	39.7	<0.492	Not sampled
MW-101	7/7/1995	ND	ND	ND	ND	ND	ND	ND	ND	No compounds detected
	11/1/2004	0.51	<0.50	<0.50	<0.25	<0.50	<0.50	0.28	<0.20	Not sampled
	5/17/2005	0.72 J	<0.451	<0.378	<0.609	<0.295	<0.441	<0.495	<0.492	Not sampled
MW-102B	7/7/1995	ND	ND	ND	ND	ND	ND	ND	ND	No compounds detected
	11/1/2004	<0.50	<0.50	<0.50	<0.25	<0.50	<0.50	0.26	<0.20	Not sampled
	5/17/2005	<0.433	<0.451	<0.378	<0.609	<0.295	<0.441	<0.495	<0.492	Not sampled
MW-108	7/8/1995	ND	ND	ND	ND	ND	ND	ND	ND	No compounds detected
MW-109A	7/8/1995	ND	ND	ND	ND	ND	ND	ND	ND	No compounds detected
	7/21/2004	<0.50	<0.50	<0.50	<0.25 B	<0.50 B	<0.50	<0.20	<0.20	No compounds detected
	11/1/2004	<0.50	<0.50	<0.50	<0.25	<0.50	<0.50	<0.20	<0.20	Not sampled
	5/17/2005	<0.433	<0.451	<0.378	<0.609	<0.295	<0.441	<0.495	<0.492	Not sampled
MW-110B	7/8/1995	ND	ND	ND	ND	ND	ND	ND	ND	No compounds detected
	7/21/2004	<0.50	<0.50	<0.50	<0.25 B	<0.50 B	<0.50	<0.20	<0.20	No compounds detected
	11/1/2004 ²	<0.50	<0.50	<0.50	<0.25	<0.50	<0.50	<0.20	<0.20	Not sampled
	5/17/2005	<0.433	<0.451	<0.378	<0.609	<0.295	<0.441	<0.495	<0.492	Not sampled
MW-111A	7/9/1995	ND	ND	ND	ND	ND	ND	ND	ND	No compounds detected
	7/21/2004	<0.50	<0.50	<0.50	<0.25 B	<0.50 B	<0.50	<0.20	<0.20	No compounds detected
	11/2/2004	<0.50	<0.50	<0.50	<0.25	<0.50	<0.50	<0.20	<0.20	Not sampled
	5/17/2005	<0.433	<0.451	<0.378	<0.609	<0.295	<0.441	<0.495	<0.492	Not sampled
MW-111B	7/9/1995	ND	ND	ND	ND	12.7	ND	ND	ND	No compounds detected
	7/21/2004	<0.50	<0.50	<0.50	0.63	7.4	0.53	0.32	0.49	No compounds detected
	7/21/04 Dup	<0.50	<0.50	<0.50	<0.25	25	0.54	0.86	<0.20	No compounds detected
	11/2/2004	<0.50	<0.50	<0.50	<0.25	56	<0.50	1.7	<0.20	Not sampled
	11/2/04 Dup	<0.50	<0.50	<0.50	<0.25	53	<0.50	1.7	<0.20	Not sampled
MW-112A	5/18/2005	<0.433	<0.451	2.72	<0.609	10.1	<0.441	46.1	<0.492	Not sampled
	7/9/1995	ND	ND	ND	ND	6.23	ND	1.7	ND	No compounds detected
	7/21/2004	<0.50	<0.50	<0.50	<0.25	12	<0.50	0.68	<0.20	No compounds detected
	11/2/2004 ²	<0.50	<0.50	<0.50	<0.25	4.9	<0.50	<0.20	<0.20	Not sampled
MW-112B	5/18/2005	<0.433	<0.451	<0.378	<0.609	1.34	<0.441	<0.495	<0.492	
	7/9/1995	ND	ND	ND	ND	57	ND	2.78	ND	No compounds detected
	7/21/2004 ¹	<0.50	<0.50	<0.50	<0.25	83	<0.50	2.4	<0.20	No compounds detected
	11/2/2004	<0.50	<0.50	0.54	<0.25	65	<0.50	1.9	<0.20	Not sampled
MW-113	5/18/2005	<0.433	<0.451	0.89	<0.609	98.8	<0.441	2.83	<0.492	
	7/8/1995	ND	ND	ND	ND	101	ND	83.7	ND	No compounds detected
	7/21/1995	ND	ND	ND	ND	210	ND	161	ND	Not analyzed
	7/21/2004 ¹	<0.50	<0.50	1.7	<0.25	83	<0.50	40	<0.20	No compounds detected
	11/2/2004 ²	<0.50	<0.50	1.3	<0.25	80	<0.50	37	<0.50	Not sampled
	5/18/2005	<0.433	<0.451	1.11	<0.609	36.2	<0.441	33.3	<0.492	
	5/18/05 Dup	0.5	<0.451	1	<0.609	36.6	<0.441	33.8	<0.492	

Table 2: Organic Compounds in Groundwater in Soccer Field Monitoring Wells
Former Magnetek Facility
Waukesha, WI

Well ID	Sample Date	Volatile Organic Compounds								Polynuclear Aromatic Hydrocarbons
		1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-dichloroethene	Naphthalene	Tetrachloroethene	1,1,1-Trichloroethane	Trichloroethene	1,2,4-Trimethylbenzene	See lab report for complete list
WDNR	PAL	85	0.7	7	8	0.5	40	0.5	96	
	ES	850	7	70	40	5	200	5	480	
MW-114	7/8/1995	24.4	<u>3.32</u>	ND	ND	ND	247 D	95.4	ND	No compounds detected
	7/21/1995	40.2	<u>3.93</u>	ND	ND	ND	317 E	ND	ND	Not analyzed
	7/21/2004	6.4	<0.50	<0.50	<0.25	<0.50	<0.50	<0.20	<0.20	No compounds detected
	11/1/2004 ²	5	<0.50	<0.50	<0.25	<0.50	<0.50	<0.20	<0.20	Not sampled
	5/17/2005	0.98	<0.451	<0.378	<0.609	<0.295	<0.441	<0.495	<0.492	
Trip blank	7/9/1995	No detection of any volatile organic compound								
	7/21/1995	No detection of any volatile organic compound								
	7/21/2004	No detection of any volatile organic compound								
	11/1/2004	No detection of any volatile organic compound								
	5/17/2005	methylene chloride detected in the trip blank and most samples - presumed to be a lab artifact								

Notes:

Concentrations in ug/L

ES indicates exceedance of NR 140 Enforcement Standard (ES)

ES indicates exceedance of NR 140 Preventive Action Limit (PAL)

1995 results extracted from Tables in Phase III report issued July 1995

29 ppb of chloromethane detected in MW-112B and MW-113 on 7/21/04

Low levels of toluene (<0.40 ppb) detected in Nov 2004 in MW-110B, MW-112A, MW-113, MW-114

"B" flag indicates that the contaminant was detected in the method blank

"D" flag indicates that compounds were identified at a secondary dilution factor

"E" flag not identified on July 1995 tables or on analytical report from lab

"J" flag indicates concentration between limit of detection & limit of quantitation

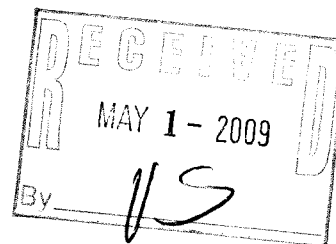
AECOM Environment

W239 N2890 Pewaukee Road, Unit D, Pewaukee, Wisconsin 53072

T 262.523.2040 F 262.523.2059 www.aecom.com

April 30, 2009

Mr. Mark Drews, P.G.
Remediation and Redevelopment Program
Wisconsin Department of Natural Resources
2300 North Martin Luther King Drive
Milwaukee, WI 53212



**Subject: Groundwater Monitoring Report
Former AGA Gas Facility
309 Sentry Drive
Waukesha, Wisconsin
FID #268256560, BRRTS #02-68-000037**

Dear Mr. Drews,

AECOM, Inc. (formerly ENSR Corporation), on behalf of Linde Gas North America LLC (Linde), conducted additional site investigation activities at the former AGA Gas facility located at 309 Sentry Drive in Waukesha, Wisconsin (Site; Figure 1) from March through September 2008. The additional activities were conducted in response to the WDNR letter dated March 19, 2008: *Supplemental Site Investigation, Former AGA Gas Facility*. The activities included collecting two additional rounds of quarterly depth-to-groundwater measurements, conducting one round of groundwater sampling, and performing a review of the Wisconsin Department of Natural Resources (WDNR) files for the Site and surrounding properties. In addition, several of the groundwater monitoring wells were abandoned in September 2008 in advance of Site redevelopment activities that are underway by the current property owner Airgas, Inc. (Airgas). Summarized herein are the results of the additional investigation activities, as well as AECOM's recommended actions to move this case toward closure.

Groundwater Monitoring Activities

There are currently eight groundwater monitoring wells (MWE-1 through MWE-8) and one extraction well (EW-1) at the Site. Please note that extraction well EW-1 was previously believed to be NET-MW1, and was therefore referred to as NET-MW1 in the prior ENSR/AECOM report. Extraction well EW-1 is associated with the investigation/remediation of the O'Rourke Distributing Company property to the north of the Site. The well locations are shown on Figure 2.

Groundwater elevation and flow direction

AECOM collected depth-to-groundwater measurements from the eight on-site monitoring wells on March 28, 2008 (March 2008 event), and from the eight on-site monitoring wells and the extraction well (EW-1) on June 4, 2008 (June 2008 event) and September 3, 2008 (September 2008 event). During the March 2008 event, approximate depths-to-groundwater ranged from 5.7 feet below ground surface (bgs) in MWE-8 to 9.9 feet bgs in MWE-3. During the June 2008 event, water levels were an average of 0.6 feet lower than those observed during the March 2008 event, with depths-to-groundwater ranging from approximately 6.2 feet bgs (MWE-8) to 10.5 feet bgs (MWE-3). During the September 2008 event, water levels were an average of 0.3 feet lower than those observed during the June 2008 event, with depths-to-groundwater ranging from approximately 6.7 ft bgs (MWE-8) to 10.7 ft bgs (MWE-3). Based on these measurements, the

groundwater flow direction at the Site is generally to the west-southwest. This flow direction is generally consistent with historical data, however some prior groundwater flow maps indicate a northerly component of groundwater flow in the southern portion of the Site. The regional groundwater flow direction in the vicinity of the Site is to the west, towards the Fox River.

The historical depths-to-groundwater and groundwater elevations measured by AECOM are provided in Table 1. Groundwater elevation contour maps with the measurements collected during the March, June, and September 2008 events are included as Figures 3, 4, and 5 respectively.

Groundwater analytical results

AECOM collected groundwater samples from all on-site monitoring wells on June 4, 2008. The groundwater samples were submitted for laboratory analysis of volatile organic compounds (VOCs; SW 8260B). Groundwater sample results are provided on Table 2. As indicated on Table 2, trichloroethene (TCE) and/or tetrachloroethene (PCE) were reported in the groundwater samples collected from monitoring wells MWE-1, MWE-3, MWE-5, MWE-6, MWE-7, MWE-8, and extraction well EW-1 at concentrations in exceedance of the Wisconsin Administrative Code (WAC) Chapter (Ch.) NR 140 Enforcement Standards (ESs) or Preventive Action Limits (PALs). However, with the exception of those reported in MWE-7, the concentrations of TCE and PCE decreased since the last groundwater sampling event in November 2007.

Chloromethane was detected in the groundwater sample from MWE-4 and bromodichloromethane was detected in the groundwater sample from EW-1 at concentrations that exceed their respective PALs. It is important to note that both of these detections were flagged by the analytical laboratory as being estimated values because the results were reported above the laboratory method detection limit, but below the limit of quantification. Several other VOCs, including chloroform (EW-1), cis-1,2-dichloroethene (MWE-5 and MWE-6), and 1,1,1-trichloroethane (EW-1), were reported in the groundwater samples collected at the Site; however, none of the concentrations exceeded their respective PAL. No other VOCs were reported in any of the groundwater samples collected during the June 2008 event.

Current and historical groundwater analytical results are included in Table 2, and a map of PAL and ES exceedances in groundwater reported during the June 2008 event is included as Figure 6. The laboratory analytical report for the June 2008 event is provided in Appendix A.

Groundwater geochemistry results

Field geochemical parameters (dissolved oxygen, oxidation-reduction potential, specific conductivity, temperature, and pH) were collected from the site wells during the sampling activities. DO measurements ranged from 0.43 milligrams per liter (mg/L) in MWE-8 to 7.92 mg/L in MWE-2. Additionally, ORP readings ranged from -92.3 millivolts (mV) in MWE-8 to 353.9 mV in MWE-7. These results are generally indicative of aerobic subsurface conditions. The field geochemical parameters are included in Table 3.

WDNR File Review Activities

On June 20, 2008, AECOM personnel conducted a review of WDNR files available for the Site and several surrounding properties in an effort to gather additional information regarding potential off-site sources of the reported on-site groundwater impacts. AECOM's review focused on seven properties in the vicinity of the Site with reported PCE and/or TCE impacts in groundwater. The locations of each property and their reported groundwater flow directions are included in Figure 7. Following is a summary of AECOM's findings:

Former Magnetek Electric Facility (Magnetek Property)
400 S. Prairie Avenue, Waukesha, Wisconsin
BRRTS No. 02-68-000243

The Magnetek Property is located immediately adjacent to the Site to the south and southeast. Several mineral oil and waste oil underground storage tanks (USTs) were formerly utilized at the Magnetek Property, and a historical release from the mineral oil USTs was reported. Free product (identified as mineral oil) has historically been detected in one of the monitoring wells on the Magnetek property. Chlorinated VOCs (including TCE and PCE) were reported in soil samples collected during site investigation activities. TCE and PCE concentrations were also reported in groundwater samples collected from the monitoring wells located on the Magnetek Property. Based on AECOM's file review, the source of chlorinated VOCs at the Magnetek Property was not identified.

The groundwater flow direction at the Magnetek Property has consistently been reported to be to the northwest which is generally towards the former AGA Gas Site. The most recent groundwater analytical data available in the WDNR files for the Magnetek Property was from a May 2005 groundwater sampling event and reported in a GeoTrans, Inc report titled *May 2005 Groundwater Monitoring Results – Former Magnetek Facility, Waukesha, WI*, dated August 10, 2005 (May 2005 GeoTrans Report) which indicated that concentrations of TCE and PCE above the ESs were present in several of the Magnetek monitoring wells located along the northern and western property boundaries. Several figures and tables from the May 2005 GeoTrans Report are included in Attachment B. The Environmental Repair Program (ERP) investigation at the Magnetek Property is currently an open case with the WDNR.

O'Rourke Distributing Company, Inc. (O'Rourke Property)
303 Sentry Drive, Waukesha, Wisconsin
BRRTS No. 03-68-001323, 02-68-529106

The O'Rourke Property is located immediately north of the Site. Historical reported uses for the O'Rourke Property include vehicle fuel service and the storage and distribution of bulk petroleum products. Numerous USTs and above-ground storage tanks (ASTs) including those containing gasoline, diesel, and fuel oil, were reportedly located at the O'Rourke Property, and several are still present. Chlorinated VOCs (including TCE and PCE) were reported in soil and groundwater samples collected from the site. The groundwater flow direction at the O'Rourke Property was reported to be generally to the south, toward the former AGA Gas Site. The original leaking UST (LUST) case for the O'Rourke Property is currently conditionally closed with the WDNR. The ERP case, which was opened based on subsurface impacts detected during a 2004 Phase II ESA at the O'Rourke Property, remains open with the WDNR.

Jensen Equipment Company, Inc. (Jensen Property)
831 Phillip Drive, Waukesha, Wisconsin
BRRTS Nos. 02-68-001108, 03-68-003073

The Jensen Property is located approximately 1/8 of a mile north of the Site, just northeast of the O'Rourke Property. Petroleum volatile organic compound (PVOC) related impacts have been reported in soils at the Jensen Property. The impacts were reportedly associated with a former gasoline UST; however, the soil impacts were not considered to have impacted groundwater. PCE concentrations were reported in groundwater samples collected from the monitoring wells on the property. The reported source of the PCE impacts in the groundwater beneath the Jensen property was from an unknown and off-site source. The groundwater flow direction at the Jensen

Property was reported to be to the south, towards the former AGA Gas Site. A LUST investigation and ERP investigation have been conducted at the Jensen property. The LUST and ERP cases were closed by the WDNR in 1995 and 1997, respectively.

Normart Facility Property (Normart Property)
845 West College Avenue, Waukesha, Wisconsin
BRRTS No. 02-68-206289, 03-68-002899

The Normart Property is located approximately 1/5 of a mile north of the Site. Gasoline constituents were reported in soil associated with a LUST investigation. Groundwater samples collected during the LUST investigation indicated chlorinated VOCs (including PCE and TCE) impacts in monitoring wells on the Normart Property. The source of the chlorinated VOC impacts was reported to be from an unknown and off-site source. The groundwater flow direction at the Normart Property was reported to be to the southwest. The LUST incident was closed by the WDNR in 1993 following completion of a remedial action. An ERP incident investigation was closed by the WDNR in 1999 and the Normart Property was granted an off-site liability exemption for the chlorinated VOC impacts.

Former Amron Facility (Amron Property)
525 Progress Avenue, Waukesha, Wisconsin
BRRTS No. 02-68-244844

The Amron Property is located approximately 3/4 of a mile southeast of the Site. Manufacturing chemicals (including TCE) were reportedly used at this location. Numerous USTs were historically present and reportedly removed from the Amron Property, including a hazardous waste UST, drawing oil USTs, cutting oil USTs, used solvent and oil USTs, lubricant oil USTs, and waste oil USTs. Soil impacts were reportedly observed during the UST closures and subsequent subsurface investigation, and chlorinated VOCs (including TCE) were reported in groundwater samples collected from the monitoring wells on the Amron Property. PCE was reported in groundwater samples collected from a monitoring well on the Degussa Foods Property to the north of the Amron Property. The groundwater flow direction at the Amron Property is reported to be to the north. An ERP investigation for the Amron Property is currently an open case with the WDNR.

Wisconsin DOT Waukesha Sign Shop (Waukesha Sign Shop Property)
531 West Newhall Avenue and 310 South West Avenue, Waukesha, Wisconsin
BRRTS No. 02-68-000061

The Waukesha Sign Shop Property is located approximately 1/2 mile east of the Site. A heating oil UST and an unleaded gasoline UST were previously operated at the site. The heating oil UST was abandoned in place in 1989 and the gasoline UST was removed in 1985. It was also reported that dumping allegedly occurred at the Waukesha Sign Shop Property, prior to 1954. VOCs were reported in soil, and chlorinated VOCs (including TCE) were reported in groundwater. The groundwater flow direction at the Waukesha Sign Shop Property was reported to be to the northwest. An ERP investigation for the Waukesha Sign Shop Property is currently an open case with the WDNR.

Carroll College – Grand Avenue Redevelopment Area
Quality Launderers & Cleaners (Quality Cleaners Property), Wrighton's Service Property (Wrighton's Property), and Carroll College Physical Plant (College Physical Plant Property)
215-225 North Grand Avenue, Waukesha, Wisconsin.

BRRTS Nos. 02-68-226287, 03-68-003018B, 03-68-174943

The Carroll College Redevelopment Area file includes documentation of investigations conducted at the Quality Cleaners Property, the Wrighton's Property, and the College Physical Plant Property (collectively referred to as "Redevelopment Properties"). The Redevelopment Properties are located approximately one mile northeast of the Site. Historical releases from fuel oil USTs were reported at the College Physical Plant Property.; historical releases from gasoline and waste oil USTs were reported at the Wrighton's Property; and a release of "dry cleaning contaminants" was reported at the Quality Cleaners Property. Chlorinated VOCs were reported in soil and groundwater samples collected from the Redevelopment Properties. Groundwater impacts reportedly extend beyond the boundaries of the Redevelopment Properties. The groundwater flow direction at the Redevelopment Properties was historically reported to be to the north-northwest with a minor southern flow component.

An ERP investigation for the Quality Cleaners Property is currently an open case with the WDNR. A LUST incident at the Wrighton's Property is currently closed with the WDNR. The LUST investigation for the College Physical Plant Property is currently closed with the WDNR and an off-site liability exemption was granted.

During the above referenced file review activities, several other properties, including Prairie Home Cemetery (BRRTS 02-68-000841) and the Waukesha City Landfill (BRRTS 02-68-271605), were identified as possible sources of the chlorinated VOCs detected in the groundwater in the vicinity of the Site. The approximate locations of both properties are included on Figure 7. Unfortunately, these files were not readily available for AECOM at the time the file reviews were conducted.

Monitoring Well Abandonment Activities

As communicated to the WDNR on May 28, 2008 by the current property owner representative, Leigh Purdy, Airgas is in the process of developing the southern portion of the Site. Based on our review of the Airgas construction plans, a number of the existing Site groundwater monitoring wells were within the proposed construction area and required abandonment prior to the start of Airgas construction activities. On August 3, 2008, AECOM oversaw the abandonment of monitoring wells MWE-2, MWE-3, MWE-5, MWE-6, and MWE-8. The 2008 monitoring well abandonment forms are included as Attachment C. Documentation regarding the September 2006 monitoring well abandonment activities are included as Attachment D.

Conclusions and Recommendations

Based on the results of the June 2008 groundwater sampling event, TCE and/or PCE concentrations have been detected at concentrations in exceedance of the ESs and/or PALs in groundwater samples collected from several on-site monitoring wells. However, with the exception of those reported in MWE-7, the TCE and PCE concentrations decreased since the last sampling event in November 2007.

There are no known on-site sources of TCE or PCE, and no chlorinated VOC soil impacts were reported during the supplemental site investigation activities conducted in November 2007. In addition, there is no known record or anecdotal evidence of TCE or PCE ever being used at the Site. Based on available information, the Site is located an area that was mainly used for agricultural purposes until development of the area began in the mid 1960s. The southern portion of the Site remained a vacant/open field until the property was developed by Airgas in late 2008. Additionally, based on historical investigations conducted at the Site by previous consultants, the main impacts to soil were reported to be petroleum-related hydrocarbons.

Based on AECOM's review of WDNR files, at least seven properties in the vicinity of the Site have, or have had, open investigations in which chlorinated VOCs have been reported in groundwater. At least two of the properties have received off-site liability exemptions from the WDNR due to the fact that no known on-site sources for the reported groundwater impacts are known, and numerous properties in the area are potential contributors to the chlorinated VOC groundwater impacts.

Based on the information included herein, we believe that the chlorinated VOC groundwater impacts reported at the Site are associated with an off-Site source and not historic Site operations. Although the actual source of these impacts is not known, the data collected to date seem to indicate that chlorinated VOC impacted groundwater is migrating onto the former AGA Gas Site from the adjacent Magnetek property. This determination is based on the following:

- Documented chlorinated VOC impacts have been detected in groundwater at the Magnetek Property located immediately south and southeast of the former AGA Gas property. TCE and PCE groundwater impacts above the ESs have been reported in several of the Magnetek monitoring wells located near the common property boundary;
- The groundwater flow direction at the Magnetek Property has consistently been reported to be to the northwest, towards the former AGA Gas Site;
- The PCE concentrations reported in monitoring wells located on the former AGA Gas Site are highest along the southern property boundary, closest to the Magnetek property, and generally decrease moving north toward the active areas of the Site; and
- The southern portion of the Site remained a vacant/open field until the property was developed by Airgas in late 2008.

Further investigation and remediation of the identified CVOC impacts on the Site should be the responsibility of the off-Site source, not Linde. Therefore, AECOM intends to prepare an off-site liability exemption request for the detected groundwater impacts and also request case closure for this Site. Attached is a check for \$500.00 to cover the fees associated with WDNR's review of the information presented herein. We respectfully request your written concurrence before we proceed further with preparation of the off-site liability exemption request.

Mr. Mark Drews
Page 7

Thank you for your continued support with this project. Please contact either of the undersigned at 262.523.2040 with any questions or comments.

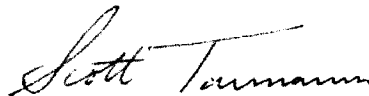
Sincerely yours,



Lauren Gromoski, P.G.
Senior Staff Geologist



Susan Petrofske
Project Manager



Scott Tarmann, P.E.
Program Manager

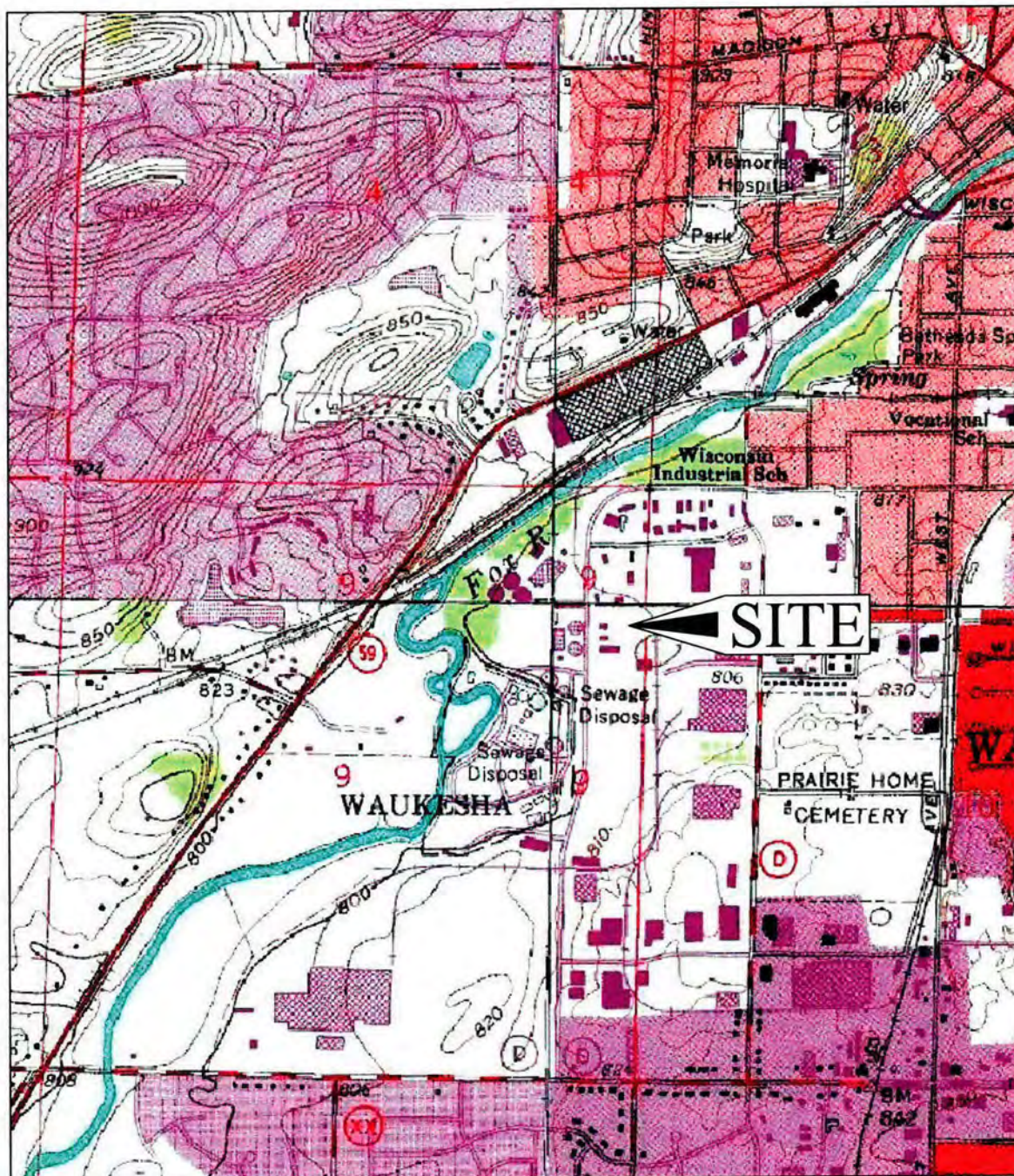
Attachments: Figure 1: Site Location Map
Figure 2: Site Layout Map
Figure 3: Groundwater Elevation Contour Map (March 2008)
Figure 4: Groundwater Elevation Contour Map (June 2008)
Figure 5: Groundwater Elevation Contour Map (September 2008)
Figure 6: Groundwater PAL and ES Exceedance Map (November 2007 and June 2008)
Figure 7: File Review Properties and Associated Groundwater Flow Directions

Table 1: Groundwater Elevations
Table 2: Groundwater Analytical Results
Table 3: Groundwater Geochemical Parameters

Attachment A: Groundwater Laboratory Analytical Report (June 4, 2008)
Attachment B: Groundwater Elevation Figure, PCE & TCE Concentration Figure, and
Groundwater Analytical Table (*May 2005 Groundwater Monitoring
Results – Former Magnetek Facility, Waukesha, WI*, GeoTrans, Inc.,
August 10, 2005)
Attachment C: 2008 Monitoring Well Abandonment Forms
Attachment D: 2006 Monitoring Well Abandonment Documentation

\$500 check for WDNR review fee

cc: Mr. Dave Grupp, Linde (e-copy)
Mr. Brian Thiesse, Linde (e-copy)
Mr. Mark Weller, Linde (e-copy)
Ms. Leigh Purdy, Airgas (e-copy)



Scale: 1:24,000

Linde Gas North America LLC

Supplemental Site Investigation Report

Adapted from: USGS 7.5 minute series
Waukesha, Wisconsin topographic
quadrangle in July 1, 1976.

Site Location Map

Former AGA Gas Facility
309 Sentry Drive
Waukesha, Wisconsin 53188

01-23-08

Job No. 00035-189

Figure 1

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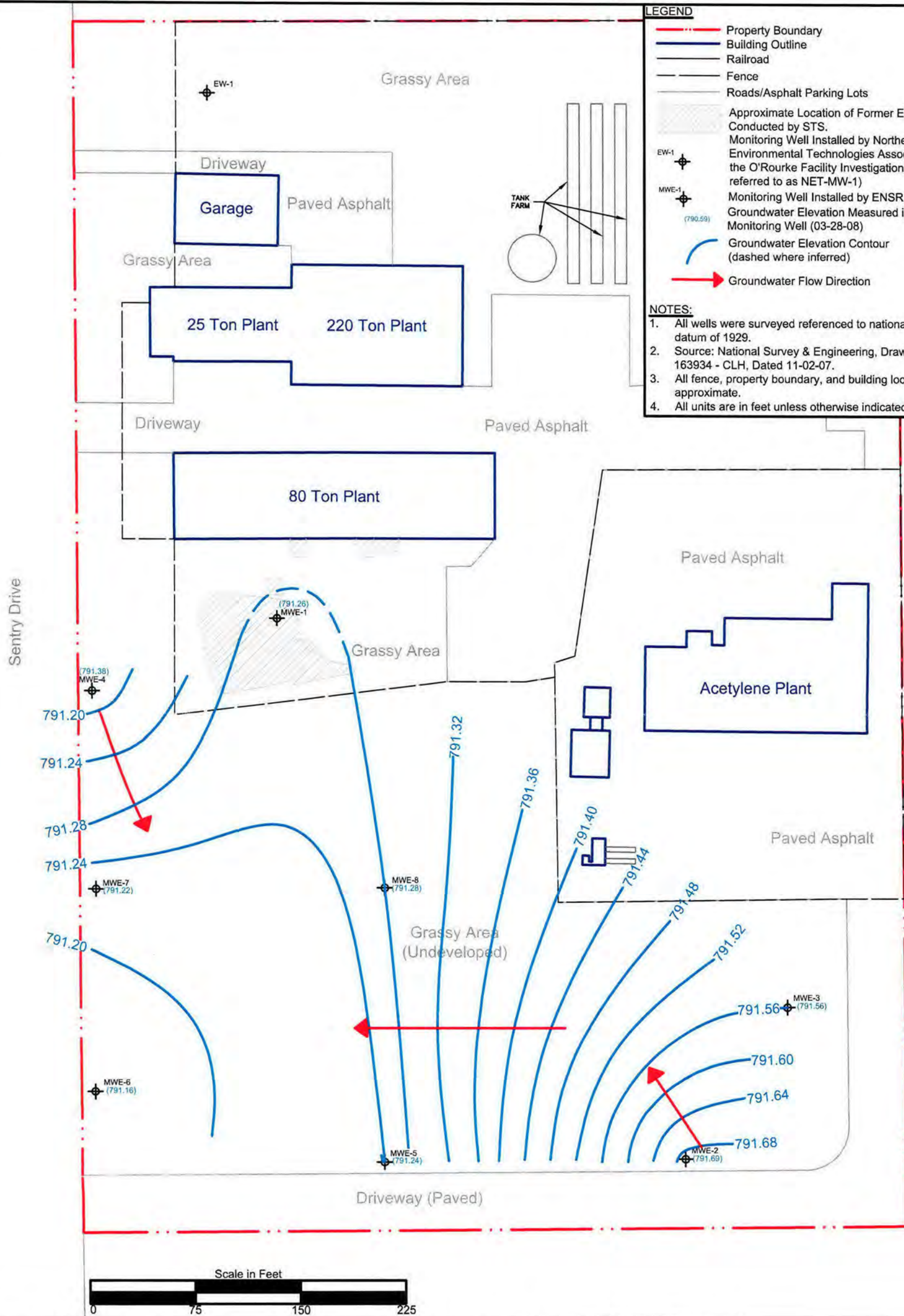
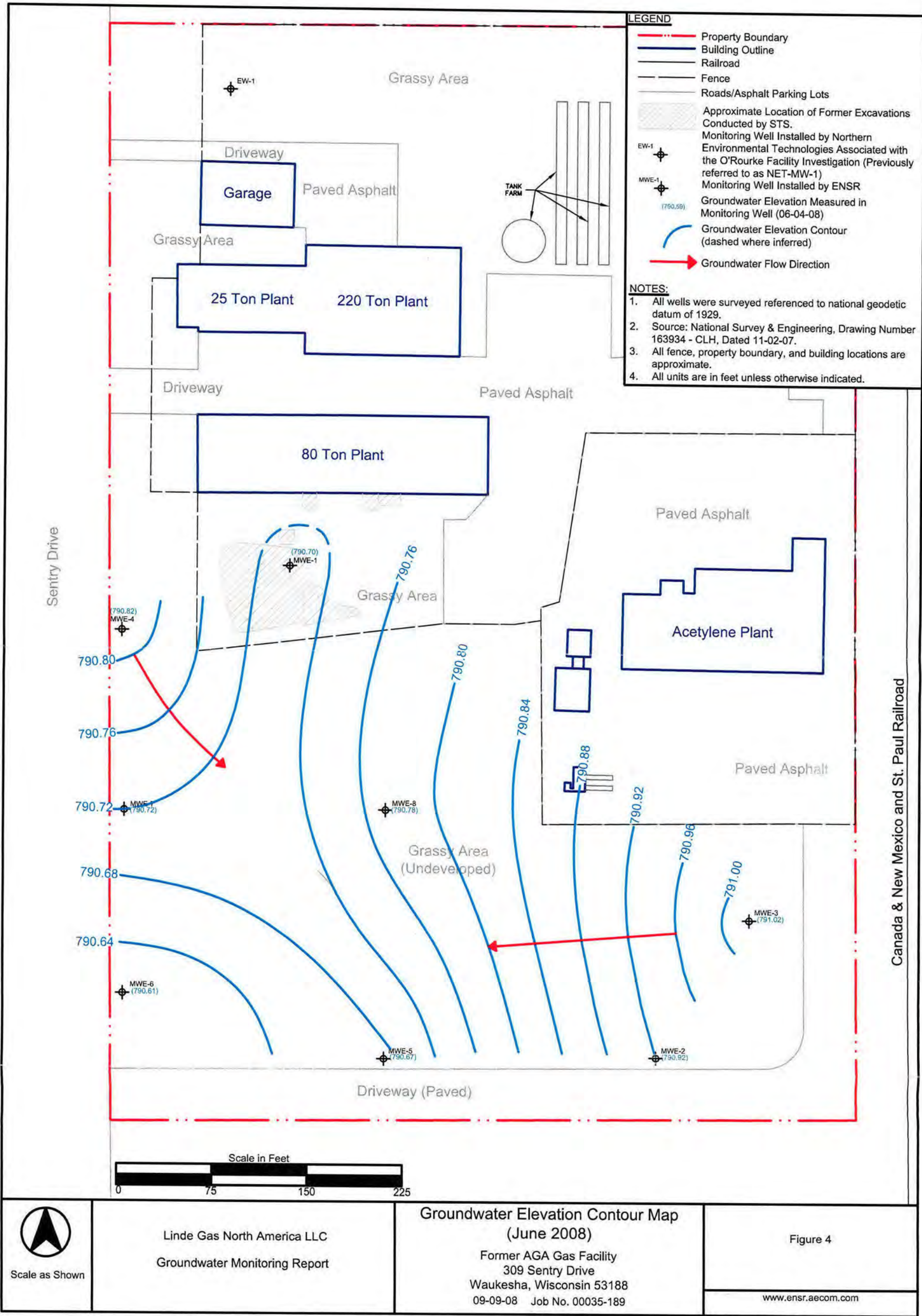
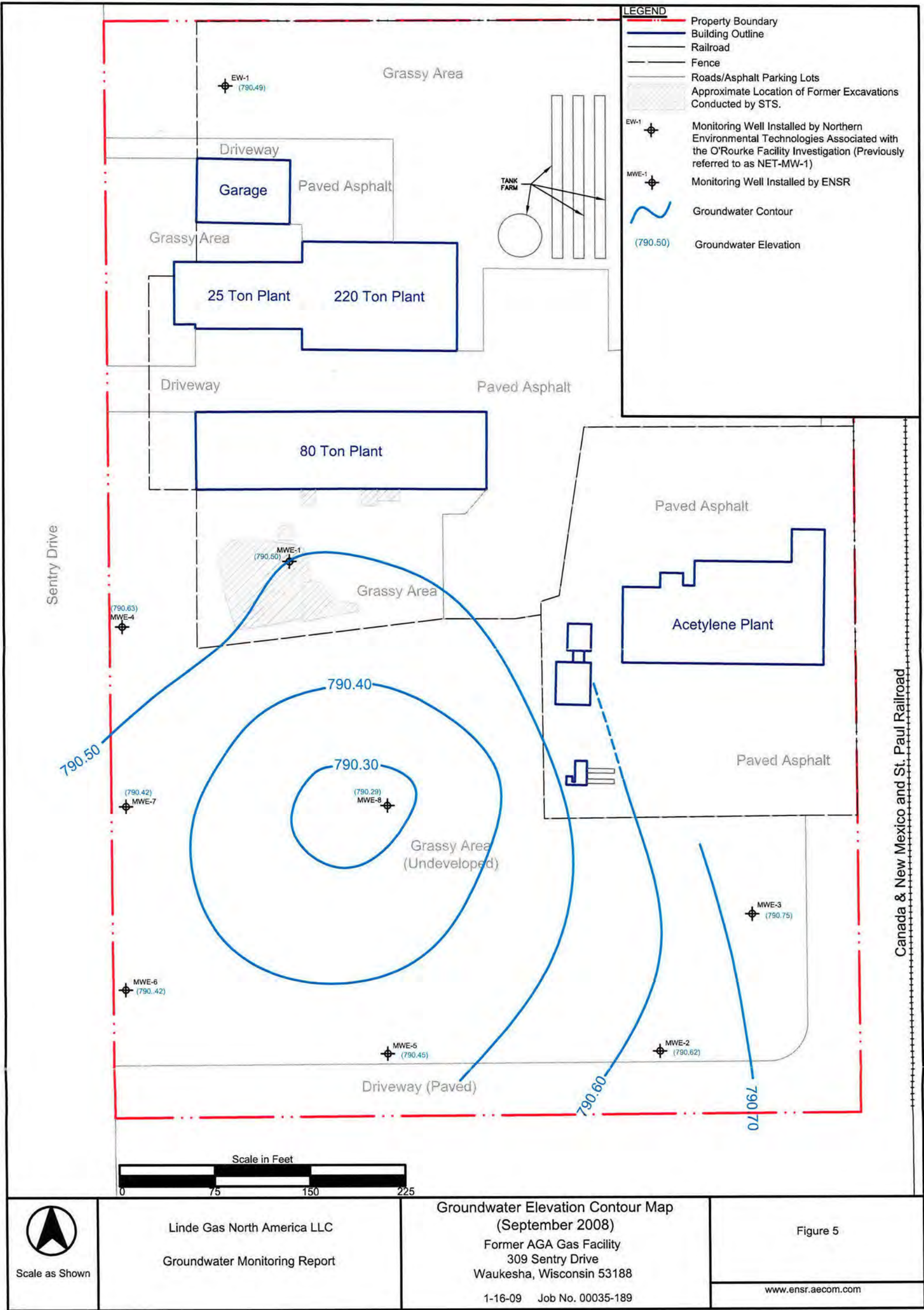


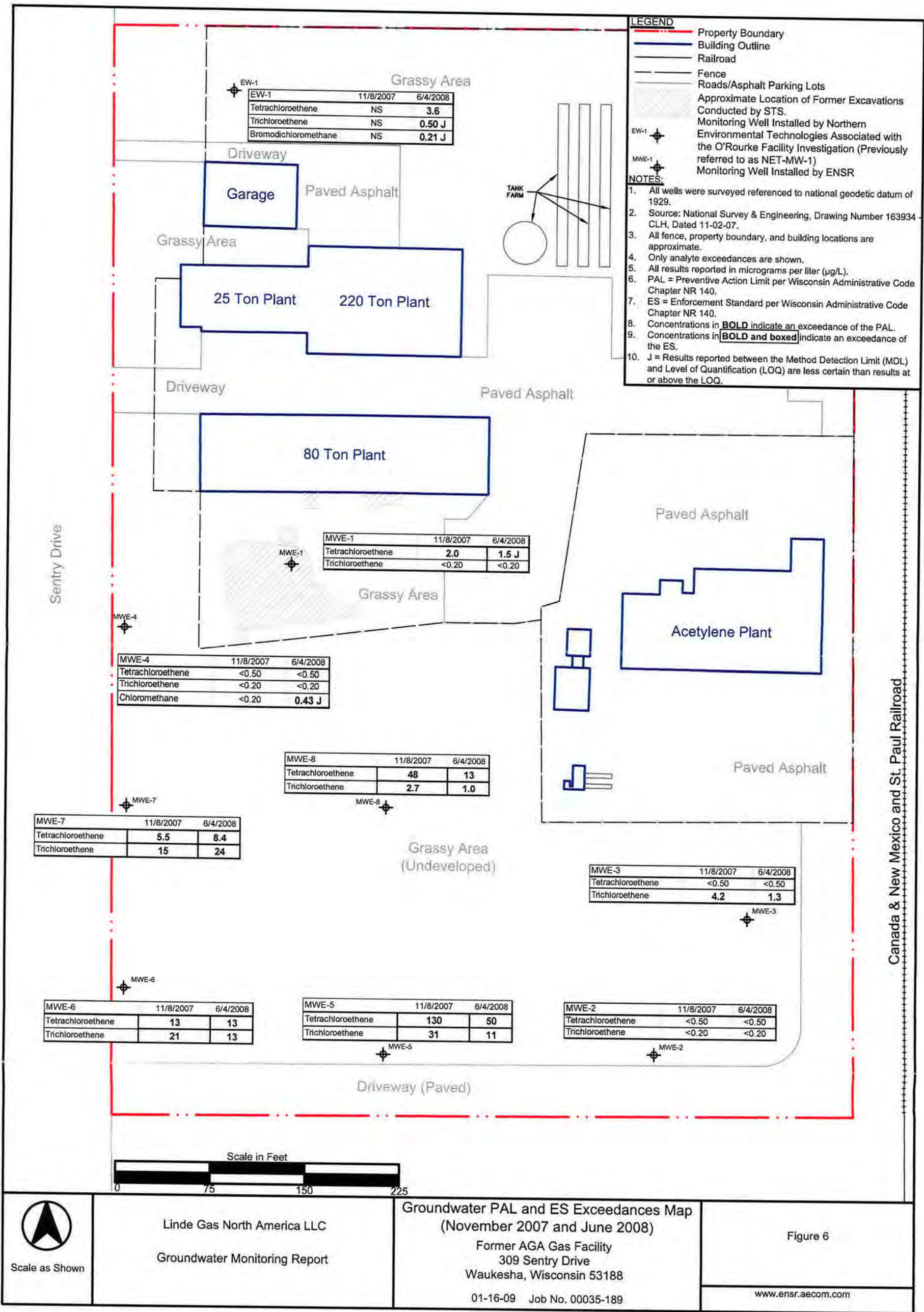
Figure 3

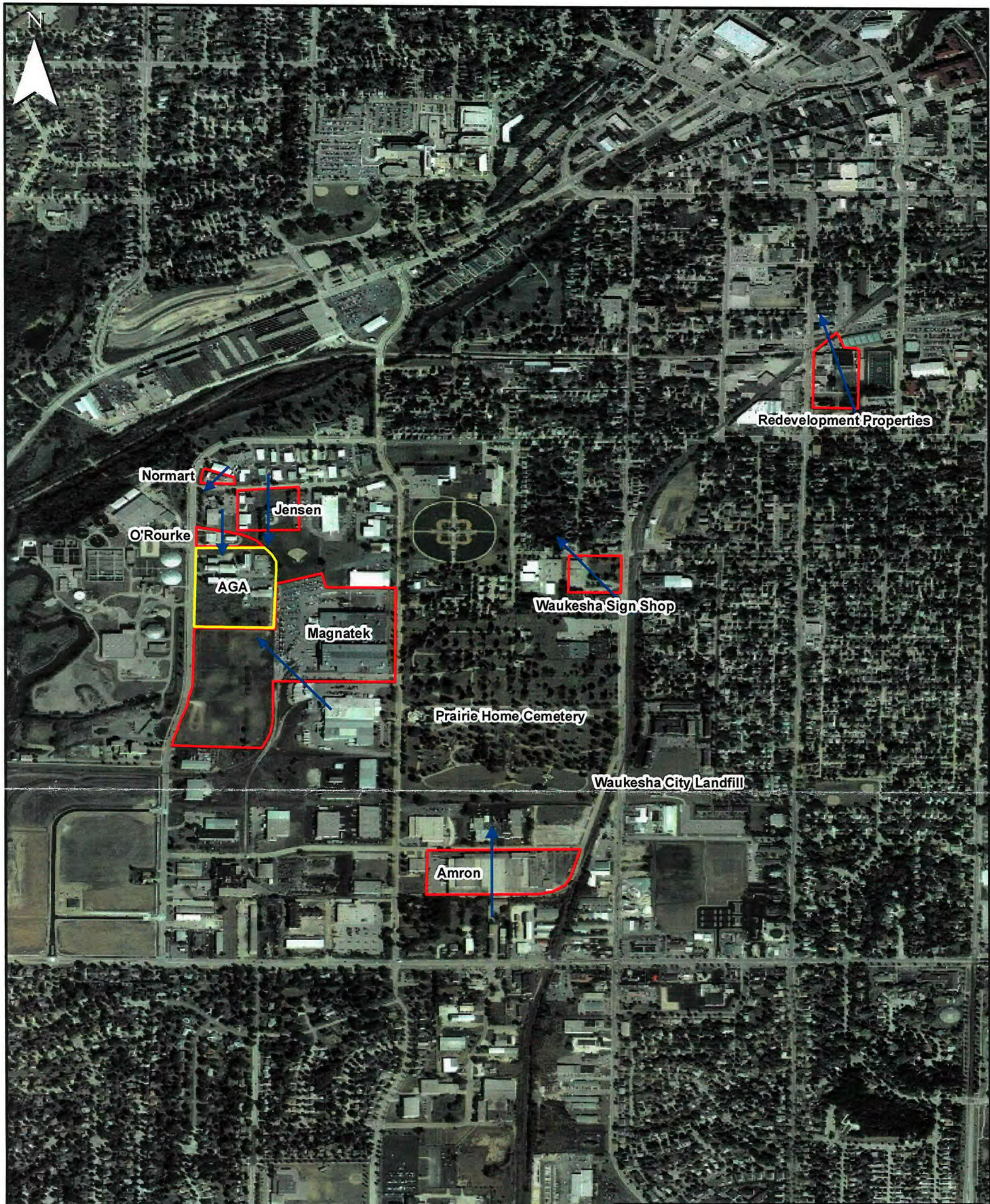
Former AGA Gas Facility
309 Sentry Drive
Waukesha, Wisconsin 53188
09-09-08 Job No. 00035-189

www.ensr.aecom.com











Property Identification Notes:
AGA = Former AGA Gas Facility
Amron = Former Amron Facility
Jensen = Jensen Equipment Company, Inc.
Magnatek = Former Magnatek Electric Facility
Normart = Normart Facility Property
O'Rourke = O'Rourke Distributing Company, Inc.
Redevelopment Properties = Quality Launderers & Cleaners,
Wrighton's Service Property, and Carroll College Physical Plant
Waukesha Sign Shop = Wisconsin DOT Waukesha Sign Shop

Legend

 Reported Groundwater Flow Direction

Approximate Property Boundary

 File Review Properties

 Former AGA Gas Facility


<div>Map Location</div> <div>Waukesha County</div> <div></div>	File Review Properties and Associated Groundwater Flow Directions		Linde Gas North America LLC
	Groundwater Monitoring Report		ENSR
	1 inch equals 1,000 feet		Project # 00035-189 09/10/2008
	<div><div>0</div><div>0.25</div><div>0.5 Miles</div></div>		Figure 7

Table 1
Groundwater Elevations

Former AGA Gas Facility
309 Sentry Drive
Waukesha, Wisconsin

Location	Ground Surface Elevation	TOC	November 8, 2007		March 28, 2008		June 4, 2008		September 3, 2008	
			DTW	GW Elev	DTW	GW Elev	DTW	GW Elev	DTW	GW Elev
MWE-1	799.13	801.87	11.28	790.59	10.61	791.26	11.17	790.70	11.37	790.50
MWE-2	798.03	800.59	9.87	790.72	8.90	791.69	9.67	790.92	9.97	790.62
MWE-3	801.47	804.02	13.21	790.81	12.46	791.56	13.00	791.02	13.27	790.75
MWE-4	799.67	802.17	11.46	790.71	10.79	791.38	11.35	790.82	11.54	790.63
MWE-5	797.41	799.84	9.31	790.53	8.60	791.24	9.17	790.67	9.39	790.45
MWE-6	797.82	800.21	9.73	790.48	9.05	791.16	9.60	790.61	9.79	790.42
MWE-7	797.60	799.70	9.16	790.54	8.48	791.22	8.98	790.72	9.28	790.42
MWE-8	796.98	799.45	8.86	790.59	8.17	791.28	8.67	790.78	9.16 ¹	790.29
EW-1*	799.22	799.53	NM	NM	NM	NM	8.78	790.75	9.04	790.49

Notes:

TOC - Top of casing elevation

DTW - Depth to groundwater in feet below top of casing

GW Elev - Groundwater elevation

All wells were surveyed and referenced to national geodetic datum of 1929.

Survey information obtained from National Survey & Engineering, Brookfield, WI.

All units are in feet unless otherwise indicated.

* = EW-1 is an extraction well associated with the investigation of the O'Rourke Distributing Company property to the north of the Site.

¹ = estimated value

Table 2
Groundwater Analytical Results

Former AGA Gas Facility
309 Sentry Drive
Waukesha, Wisconsin

Well ID	Date	ES PAL	Benzene	Chloromethane	Bromodichloro- methane	Chloroform	1,1-DCA	cis-1,2-DCE	PCE	1,1,1-TCA	TCE
			5 0.5	3 0.3	0.6 0.06	6 0.6	850 85	70 7	5 0.5	200 40	5 0.5
MWE-1	11/8/2007		0.22 J	<0.20	<0.20	<0.20	<0.50	<0.50	2.0	1.1 J	<0.20
	6/4/2008		<0.20	<0.30	<0.20	<0.20	<0.50	<0.50	1.5 J	1.6 J	<0.20
MWE-2	11/8/2007		<0.20	<0.20	<0.20	<0.20	<0.50	<0.50	<0.50	<0.50	<0.20
	6/4/2008		<0.20	<0.30	<0.20	<0.20	<0.50	<0.50	<0.50	<0.50	<0.20
MWE-3	11/8/2007		<0.20	<0.20	<0.20	<0.20	<0.50	<0.50	<0.50	<0.50	4.2
	6/4/2008		<0.20	<0.30	<0.20	<0.20	<0.50	<0.50	<0.50	<0.50	1.3
MWE-4	11/8/2007		<0.20	<0.20	<0.20	<0.20	0.74 J	<0.50	<0.50	<0.50	<0.20
	6/4/2008		<0.20	0.43 J	<0.20	<0.20	<0.50	<0.50	<0.50	<0.50	<0.20
MWE-5	11/8/2007		<0.20	<0.20	<0.20	<0.20	<0.50	0.74 J	130	<0.50	31
	6/4/2008		<0.20	<0.30	<0.20	<0.20	<0.50	0.74 J	50	<0.50	11
MWE-6	11/8/2007		<0.20	<0.20	<0.20	<0.20	<0.50	<0.50	13	<0.50	21
	6/4/2008		<0.20	<0.30	<0.20	<0.20	<0.50	0.53 J	13	<0.50	13
MWE-7	11/8/2007		<0.20	<0.20	<0.20	<0.20	<0.50	<0.50	5.5	<0.50	15
	6/4/2008		<0.20	<0.30	<0.20	<0.20	<0.50	<0.50	8.4	<0.50	24
MWE-8	11/8/2007		<0.20	<0.20	<0.20	<0.20	<0.50	<0.50	48	<0.50	2.7
	6/4/2008		<0.20	<0.30	<0.20	<0.20	<0.50	<0.50	13	0.55 J	1.0
EW-1*	6/4/2008		<0.20	<0.30	0.21 J	0.53 J [†]	<0.50	<0.50	3.6	<0.50	0.50 J

Notes:

Only analytes with reported concentrations are shown.

VOCs = volatile organic compounds.

All results reported in micrograms per liter (ug/L).

J = Results reported between the Method Detection Limit and the Limit of Quantitation (LOQ) are less certain than results at or above the LOQ.

ES = Enforcement Standard per Wisconsin Administrative Code Chapter NR 140 (January 2008).

PAL = Preventive Action Limit per Wisconsin Administrative Code Chapter NR 140 (January 2008).

1,1-DCA = 1,1-dichloroethane

cis-1,2-DCE = cis-1,2-dichloroethene

PCE = tetrachloroethene

1,1,1-TCA = 1,1,1-trichloroethene

TCE = trichloroethene

* = EW-1 is an extraction well associated with the investigation/remediation of the O'Rourke Distributing Company property to the north of the Site.

† = Chloroform was also reported in the field blank at a concentration of 0.25 ug/L.

Concentrations in **bold** indicate an exceedance of the PAL.

Concentrations in **bold and boxed** indicate an exceedance of the ES.

Table 3
Groundwater Geochemical Parameters

Former AGA Gas Facility
309 Sentry Drive
Waukesha, Wisconsin

Well ID	Date	Temperature (°C)	SPC (µS/cm)	pH (s.u.)	DO (mg/L)	ORP (mV)
MWE-1	11/08/07	15.15	882	8.58	0.76	-60.1
	06/04/08	11.99	818	7.20	1.80	278.0
MWE-2	11/08/07	15.35	316	8.31	3.50	4.8
	06/04/08	11.43	431	7.79	7.92	224.3
MWE-3	11/08/07	15.76	1,470	8.09	5.23	10.3
	06/04/08	10.85	4,115	7.59	5.58	237.6
MWE-4	11/08/07	14.58	1,434	7.88	0.66	-17.6
	06/04/08	12.06	1,710	7.05	1.30	264.2
MWE-5	11/08/07	14.52	1,403	7.68	1.62	38.4
	06/04/08	13.02	1,506	7.37	3.29	67.4
MWE-6	11/08/07	14.37	1,369	7.67	1.28	35.9
	06/04/08	11.84	1,284	7.03	3.06	353.0
MWE-7	11/08/07	13.78	1,506	7.76	2.80	16.5
	06/04/08	12.31	1,860	6.92	2.14	353.9
MWE-8	11/08/07	14.24	600	8.05	1.58	-3.5
	06/04/08	11.70	933	6.40	0.43	-92.3
EW-1*	11/08/07	NM	NM	NM	NM	NM
	06/04/08	11.24	1,769	6.93	2.07	336.5

Notes:

(°C) = degrees Celsius

SPC = specific conductivity

µS/cm = microsiemens per centimeter

s.u. = standard units

DO = dissolved oxygen

mg/L = milligrams per liter

ORP = oxidation reduction potential

mV = millivolts

* = EW-1 is an extraction well associated with the investigation/remediation of the O'Rourke Distributing

Company property to the north of the Site.

NM = not measured.

Wisconsin Department of Natural Resources

Environmental Cleanup & Brownfields Redevelopment

BRRTS on the Web

Click the Location Name below to view the Location Details page for this Activity. Other Activities, if present, may be viewed from that page.

Basic Search >> 03-68-001323 Activity Details

03-68-001323 OROURKE DISTRIBUTING CO INC						
<div style="background-color: red; color: white; display: inline-block; padding: 2px 10px; font-weight: bold;">OPEN LUST</div>						
Location Name (Click Location Name to View Location Details)				County	WDNR Region	
303 SENTRY				WAUKESHA	SOUTHEAST	
Address				Municipality		
303 SENTRY DR				WAUKESHA		
Public Land Survey System			Latitude	Google Maps	RR Sites Map	
NE 1/4 of the NE 1/4 of Sec 09, T06N, R19E			43.0000542	CLICK TO VIEW	CLICK TO VIEW	
Additional Location Description			Longitude	Facility ID	Size (Acres)	
			-88.2480878	268113230	1.5	
Jurisdiction	PECFA No.	EPA Cerclis ID	Start Date	End Date	Last Action	
DNR RR	53186-5928-03		1990-10-29		2017-04-12	
Characteristics						
PECFA Tracked?	EPA NPL Site?	Eligible for PECFA Funds?	Above Ground Storage Tank?	Drycleaner?	Co-Contamination?	On GIS Registry?
Yes	No	Yes	Yes	No	Yes	No
Actions						
Place Cursor Over Action Code to View Description						
Date	Code	Name	Comment			
1990-10-29	1	Notification				
1991-01-23	2	RP Letter Sent	RP LETTER, MEDIUM			
1992-08-17	2	RP Letter Sent				
1997-08-25	43	Status Report Received				
1999-03-18	192	O&M Report Received with Fee	PK.			
1999-06-10	93	O&M Report Approved	AGREED WITH PROPOSED MONITORING			
1999-06-10	99	Miscellaneous	PK..AGREED WITH PROPOSED MONITORING			
2000-06-08	76	Activity Transferred to DSPS (formerly Commerce)				
2000-08-29	89	DSPS (formerly Commerce) Transferred Back to DNR				
2001-02-01	79	Closure Review Request Received	bg 3/15 check #32665			
2001-09-05	80	Closure Not Approved	PND, DOC, ASR,MIM			
2003-01-13	99	Miscellaneous	JD.LETTER TO BE REVIEWED BY BG 1/29/03			
2003-01-15	700	Database Fee Paid for Groundwater	REC'D CK#31605 \$250			
2003-01-15	50	GIS Registry Site	AUTOPOPULATED FROM 700/710 ACTION ENTRY ON 20-OCT-05			
2003-01-15	710	Database Fee Paid for Soil	REC'D CK#31605 \$200			
2003-01-16	79	Closure Review Request Received	BG.REC'D GIS PKT. GIVEN TO MW 01/16/03 GIS PKT COMPLETE			
2003-01-16	99	Miscellaneous	BG.FEE LETTER SENT FOR SIR REVIEW			
2003-02-20	137	Site Investigation Report Received with Fee	BG.REC'D CK# 31230 \$750.00			
2003-03-18	38		RAP APPROVED AND CONDITIONALLY CLOSED			

		Site Investigation Report Approved		
2003-03-18	84	Conditional Closure	NEED ABANDONMENT FORMS, DEED FOR OFFSITE PROP AND COORDINATES FOR OFFSITE PROP	
Linked to Code 84: 0368001323_Conditional Closure.pdf Click to Download or Open				
2003-03-24	99	Miscellaneous	RECEIVED DEED AND COORDINATES FOR OFFSITE PROPERTY	
2012-03-06	99	Miscellaneous	GM - CONSULTANT TO CONDUCT SI	
2013-01-02	79	Closure Review Request Received	REC'D CK #3746 \$750.00	
2013-01-02	710	Database Fee Paid for Soil	REC'D CK #3747 \$200.00	
2013-01-02	700	Database Fee Paid for Groundwater	REC'D CK #3747 \$250.00	
2013-03-01	198	Request for Additional Information (Fee-Based or Closure)	REQUEST ADD'L INFORMATION	
2013-07-16	99	Miscellaneous	PECFA TRANSFER NOTIFICATION LETTER SENT	
2013-08-19	199	Additional Information Received (Fee-Based or Closure)		
2013-08-21	80	Closure Not Approved	CLOSURE DENIAL	
2015-01-07	195	Semi-Annual/PECFA Cost Reporting Requirement Met	Period: 7/1/2014 - 12/31/2014	
Click 195 Action Name above to view the NR700 report				
2015-07-27	195	Semi-Annual/PECFA Cost Reporting Requirement Met	Period: 1/1/2015 - 6/30/2015	
Click 195 Action Name above to view the NR700 report				
2015-08-24	130	DNR Regulatory Reminder Sent	PECFA SUNSET LETTER	
Linked to Code 130: 0368001323_PECFA_LTR.pdf Click to Download or Open				
2015-08-27	99	Miscellaneous	REC'D HIRED ENVIRONMENTAL CONSULTANT LTR	
2017-04-12	147	Remedial Action Design Report Received (w/out Fee)	FEE PAID UNDER BRRTS #03-68-558431	
2017-04-12	37	SI Report Received (w/out Fee)	FEE PAID UNDER BRRTS #03-68-558431	
Impacts				
Type		Comment		
Co-contamination		-		
Groundwater Contamination		-		
Soil Contamination		-		
Substances				
Substance		Type	Amount Released	Units
Gasoline - Unleaded and Leaded		Petroleum		
Gasoline - Unleaded and Leaded		Petroleum		
Diesel Fuel		Petroleum		
Chlorinated Solvents (TCE, PCE)		VOC		
Who				
Role		Name/Address		
Project Manager		JAMES DELWICHE 141 NW BARSTOW RD WAUKESHA, WI 53188		
Responsible Party		WAUKESHA STATE BANK 151 E ST PAUL AVE WAUKESHA, WI 53186		

BRRTS data comes from various sources, both internal and external to DNR. There may be omissions and errors in the data and delays in updating new information. Please see the [disclaimers page](#) for more information. We welcome your [Feedback](#).

Release 2.5.6 | 04/19/2017 | [Release Notes](#)

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
Waukesha Service Center
141 NW Barstow Street Room 180
Waukesha WI 53188

Scott Walker, Governor
Cathy Stepp, Secretary
Eric Nitschke, Regional Director
Telephone 262-574-2100
FAX 262-574-2128
TTY Access via relay - 711



August 21, 2013

Main Street Holdings, LLC
P.O. Box 709
Waukesha, WI 53187-0709

Subject: Closure Request for the Former O'Rourke Distributing Co, Inc.
303 Sentry Drive, Waukesha, WI 53186
FID# 268113230 BRRTS# 03-68-558431 & 03-68-001323

Dear Main Street Holdings:

The Department of Natural Resources (the Department) has reviewed your request for closure for the subject site, submitted by Midwest Engineering Services. The Department reviews environmental remediation cases for compliance with state rules and statutes to maintain consistency in the closure of these cases. After review of the closure request, the Department has determined that the following issues will need to be addressed before case closure can be issued for both BRRTS activities:

- The proposed cover or barrier/cap (to address the impacted soil) will need to put in place before final case closure can be issued. Documentation of the type of barrier and the installation of the cap will need to be submitted to the Department.
- The extent of the soil impacts and the location of the performance cap will need to be shown on one map. If the soil impacts go off-site, the adjoining property owner will need to be notified of the soil impacts on their property.
- Please provide an updated cap maintenance plan that confirms the installation of the cap, along with the signature of the current property owner.

When the above issues have been addressed, please submit a cover letter, together with the required documentation (with the site FID# and BRRTS# noted) to: Victoria Stovall, Wisconsin Department of Natural Resources, 2300 N. Dr. ML King Dr., Milwaukee, WI 53212.

The Department appreciates the efforts you are taking to restore the environment at this site. If you have any questions concerning this letter, please contact me at the letterhead address or (262) 574-2145.

Sincerely,

James C. Delwiche, P.G.

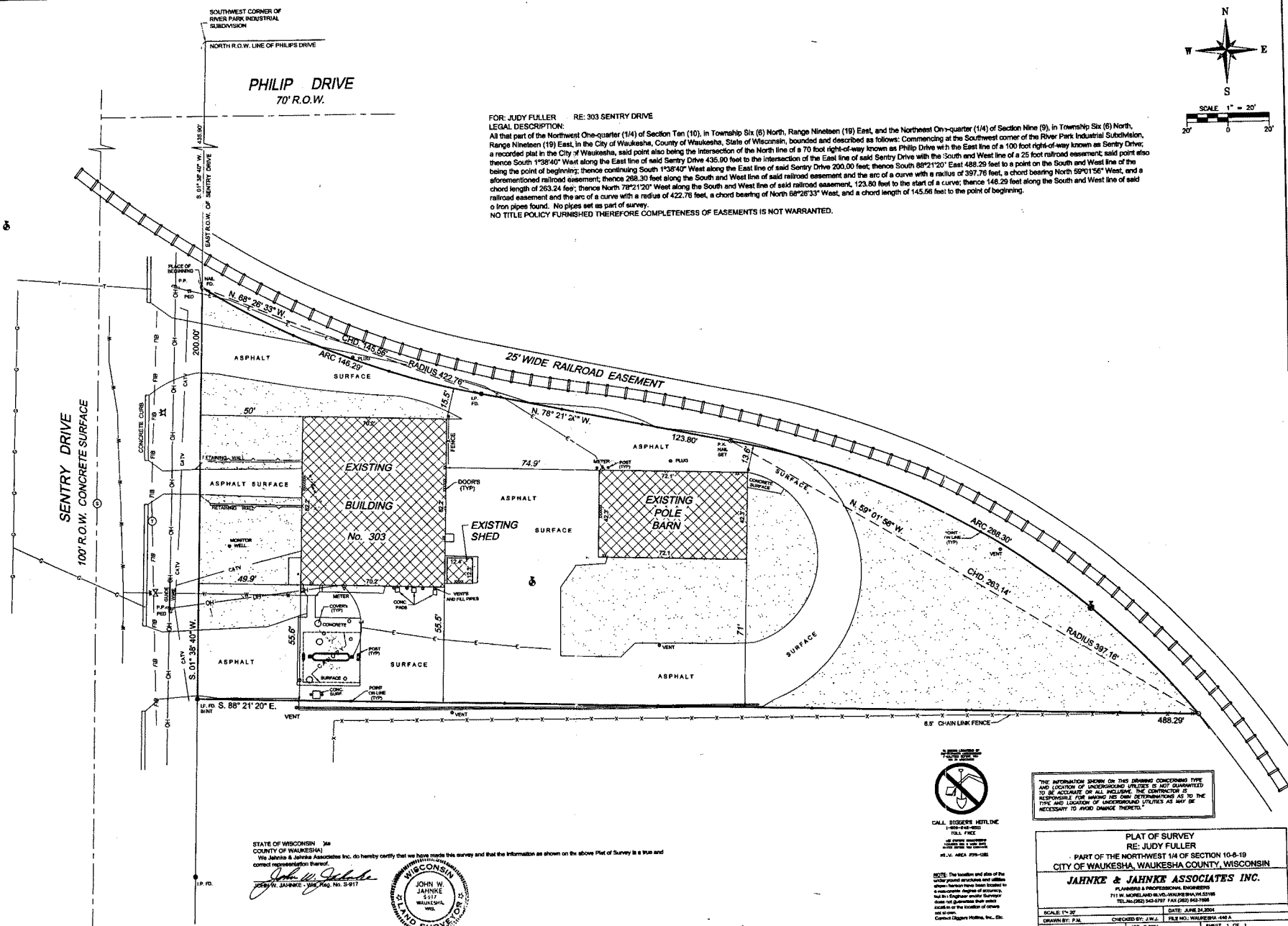
Hydrogeologist

Bureau for Remediation & Redevelopment

cc: Shelley Hildebrandt – Midwest Engineering Services

SER Case File

(NO TEXT FOR THIS PAGE)



CALL BIGGERS HOTLINE
1-800-642-0022
TOLL FREE

WE STAFFY IMMEDIATELY
1-CALLER PER 1 VOICE UNIT
MUSIC SERVICE FOR CHURCHES

RE V. AREA 709-1181

NOTE: The location and size of the underground structures and utilities shown herein have been located to a reasonable degree of accuracy, but this Engineer and/or Surveyor does not guarantee their exact location or the location of others not shown.

Contract: **Clippers Hotline, Inc., Etc.**

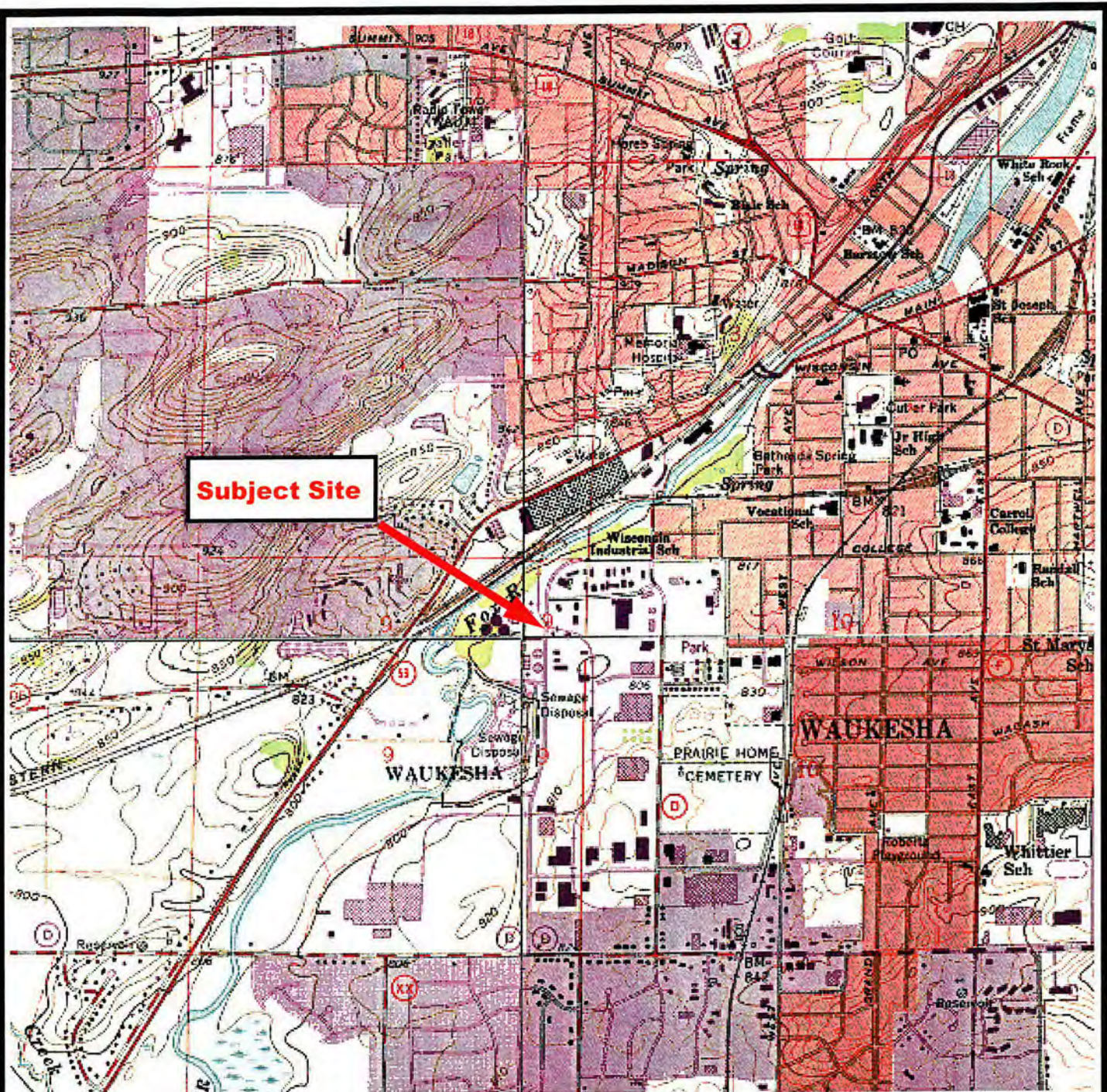
THE INFORMATION SHOWN ON THIS DRAWING CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THEREOF.

PLAT OF SURVEY
RE: JUDY FULLER
PART OF THE NORTHWEST 1/4 OF SECTION 10-8-19
CITY OF WAUKESHA, WAUKESHA COUNTY, WISCONSIN

JAHNKE & JAHNKE ASSOCIATES INC.
PLANNERS & PROFESSIONAL ENGINEERS
711 W. MORELAND BLVD.-WAUKEGON, WI 53186
TEL. No. (262) 542-0797 FAX (262) 542-7086

SCALE: 1"=20'	DATE: JUNE 24, 2004
DRAWN BY: P.M.	CHECKED BY: J.M.A.
	FILE NO.: WAUKEGON-440-A
	1 SHEET OF 3

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Source: USGS Hartland, Waukesha, Muskego and Genesee Quadrangle Maps, Dated 1959 and 1960

mes
midwest engineering services, inc.

O'Rourke Property
303 Sentry Drive
Waukesha, Wisconsin

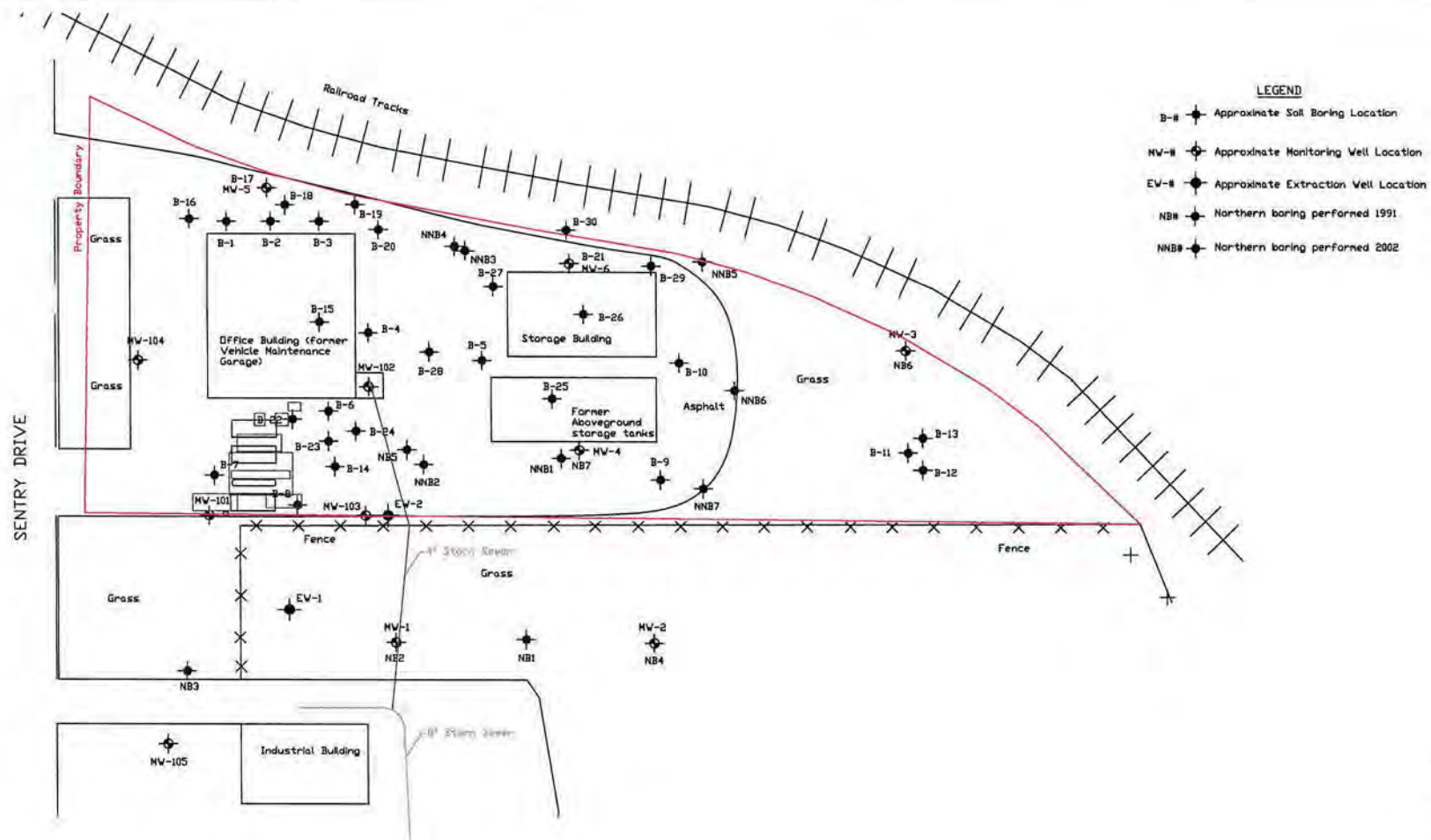
SITE LOCATION MAP

Scale: 1" = 2000' ±

Project No.: 7-41024

Date: 10-29-04

Figure 1



Based on site diagram prepared by
Northern Environmental 9/10/96



**SOIL BORING AND MONITORING WELL
LOCATION DIAGRAM**

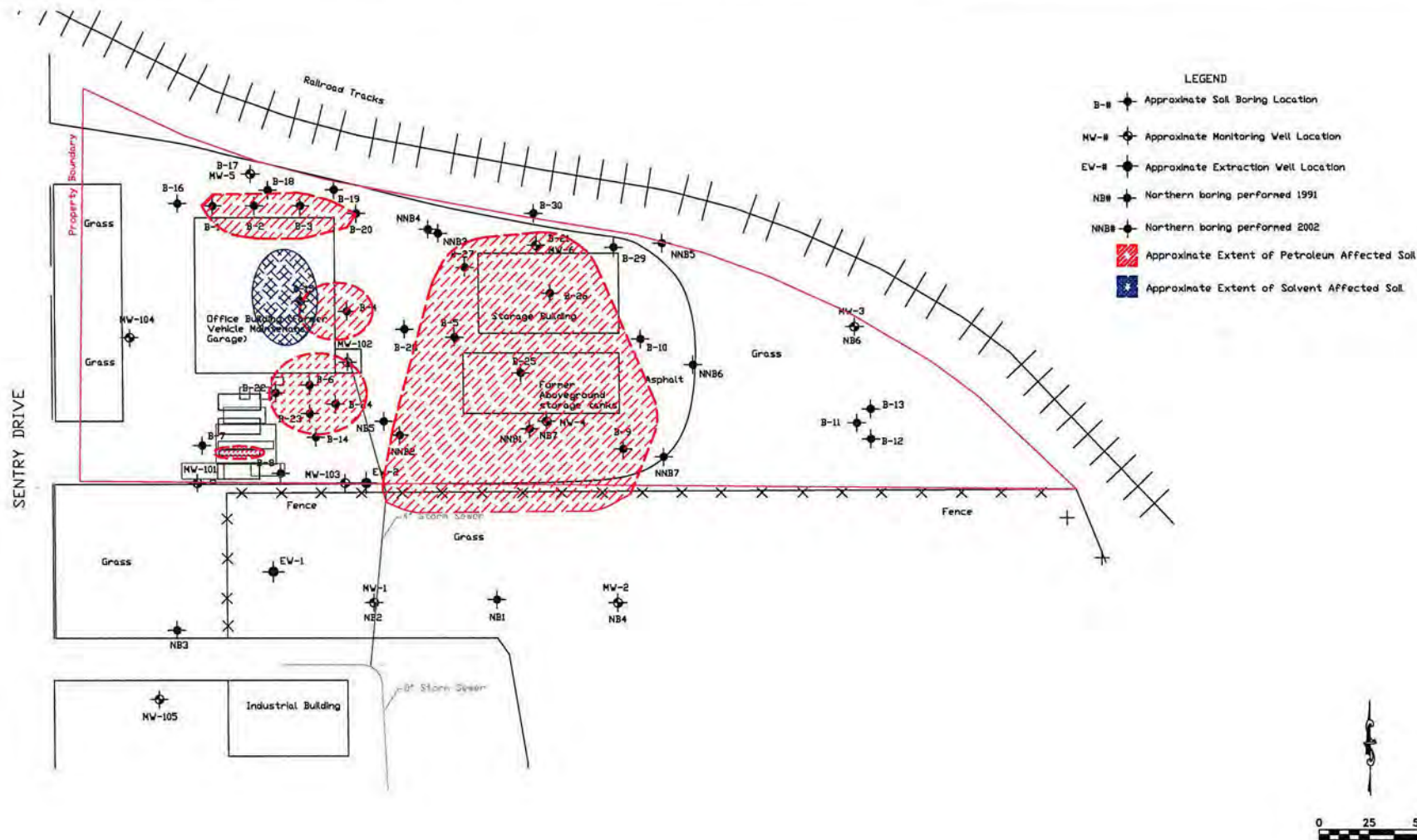
O'Rourke Property
303 Sentry Drive
Waukesha, Wisconsin

Scale: 1" = 50' +/-

Project Number: 7-41024

Date: 8/31/04

Drawn By: SLH



Based on site diagram prepared by
Northern Environmental 9/10/96



APPROXIMATE EXTENTS OF PETROLEUM
AND SOLVENT AFFECTED SOILS

O'Rourke Property
303 Sentry Drive
Waukesha, Wisconsin

A
 WEST
 MW1
 GROUND SURFACE ELEVATION: 799.55
 TOP OF CASING ELEVATION: 801.40
 GROUNDWATER ELEVATION: 790.12

NB2

NB1 MW4
 800.74
 802.54
 790.09

NB6

A'
 EAST
 MW3
 800.99
 802.95
 790.17

NB2 BOREHOLE IDENTIFICATION

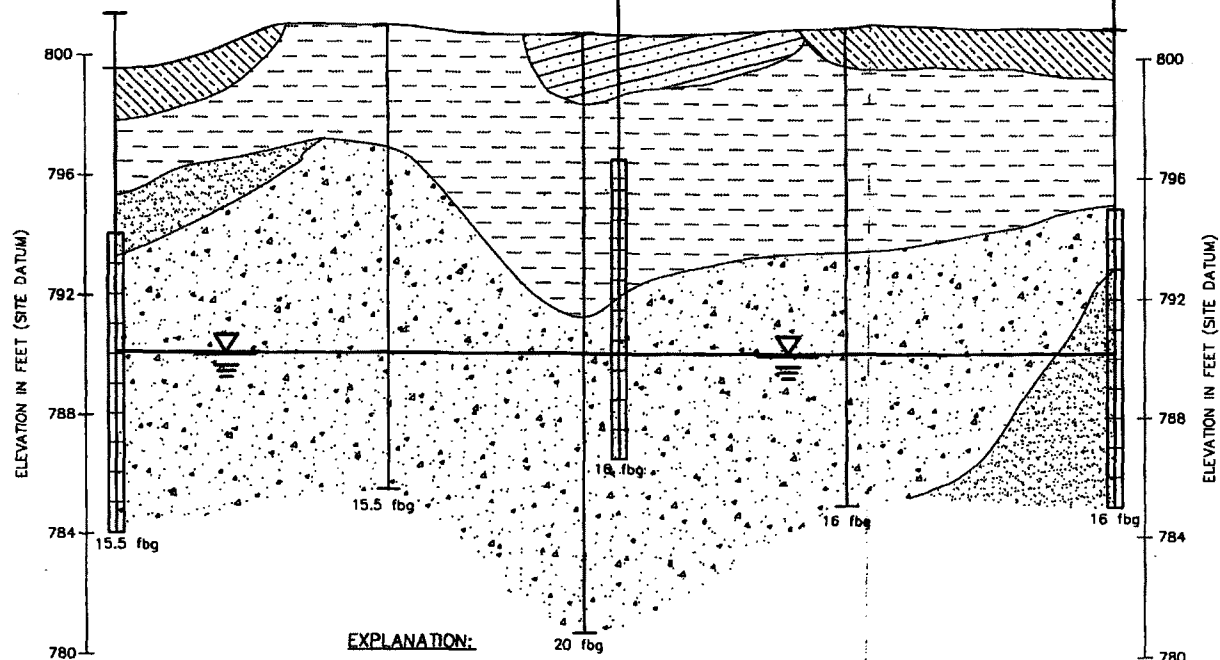
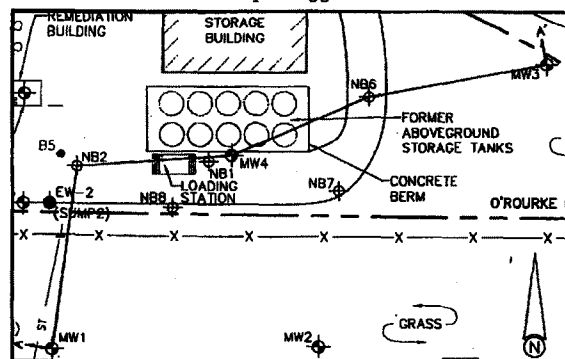
SOIL BOREHOLE

MW1
 MONITORING WELL
 IDENTIFICATION

GROUND-WATER
 MONITORING WELL WITH
 SCREENED INTERVAL

CROSS SECTION REFERENCE MAP

1" = 60'



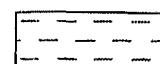
EXPLANATION:



TOPSOIL



FILL



SILTY CLAY



SILTY SAND



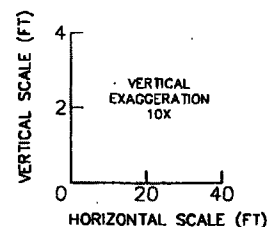
SAND AND GRAVEL



GEOLOGIC CROSS SECTION LINE



WATER TABLE



DRAWN BY: VLG PROJECT: 01-1408-0293 DATE: 8/21/02

REV. DATE

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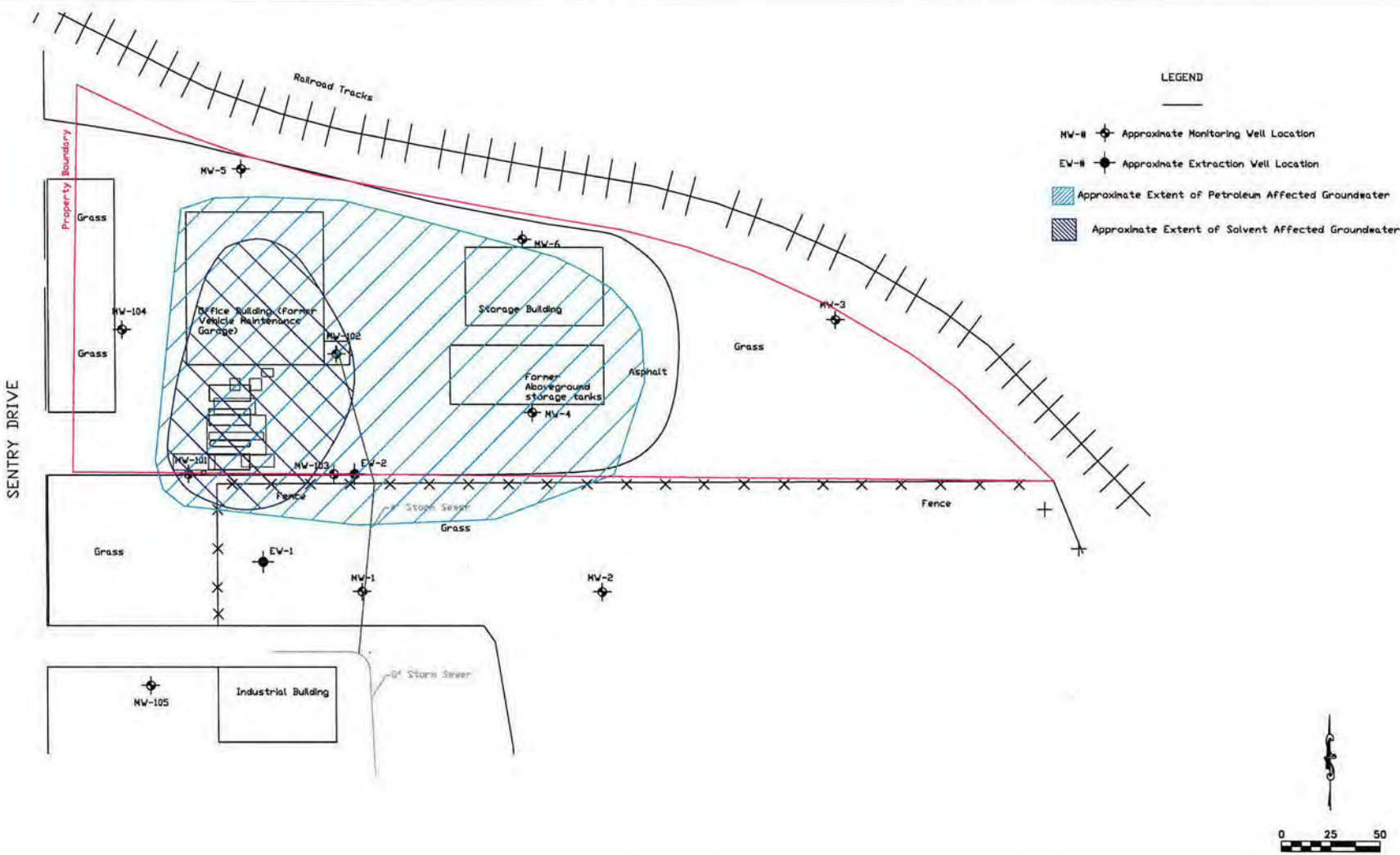
Northern Environmental
 Hydrologists • Engineers • Geologists

O'ROURKE DISTRIBUTING
 WAUKESHA, WISCONSIN

GEOLOGIC CROSS SECTION
 A-A'

FIGURE 1

17x11.dwg
PRINTED: 10/25/02



Based on site diagram prepared by
Northern Environmental 9/10/96

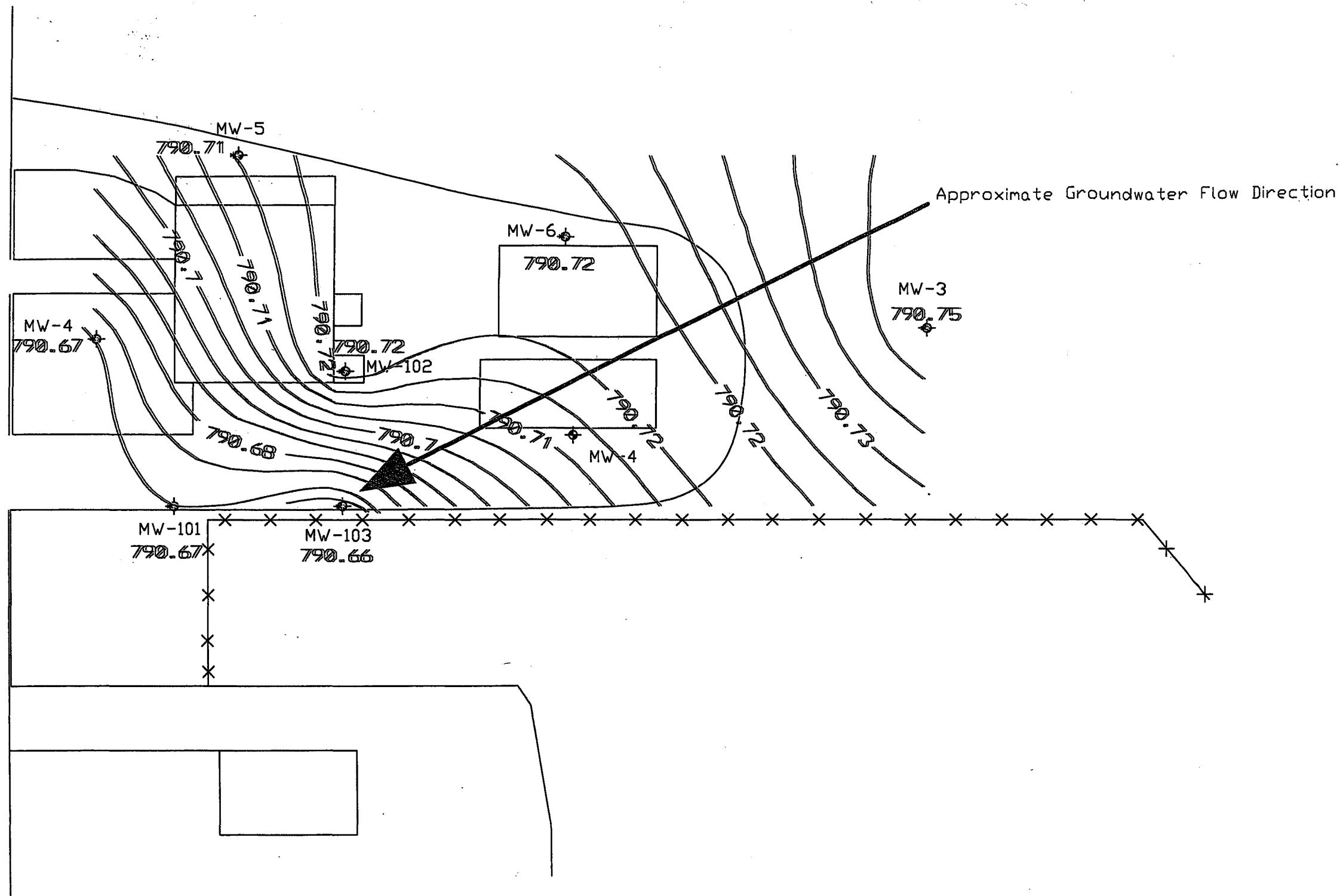


**APPROXIMATE EXTENT OF PETROLEUM
AND SOLVENT AFFECTED GROUNDWATER**

O'Rourke Property
303 Sentry Drive
Waukesha, Wisconsin

Scale: 1" = 50' +/-
Project Number: 7-41024
Date: 9/29/04
Drawn By: SLH

SENTRY DRIVE



GROUNDWATER ELEVATION CONTOUR DIAGRAM
AUGUST 2004

O'Rourke Property
303 Sentry Drive
Waukesha, Wisconsin

Scale: 1" = 50' +/-

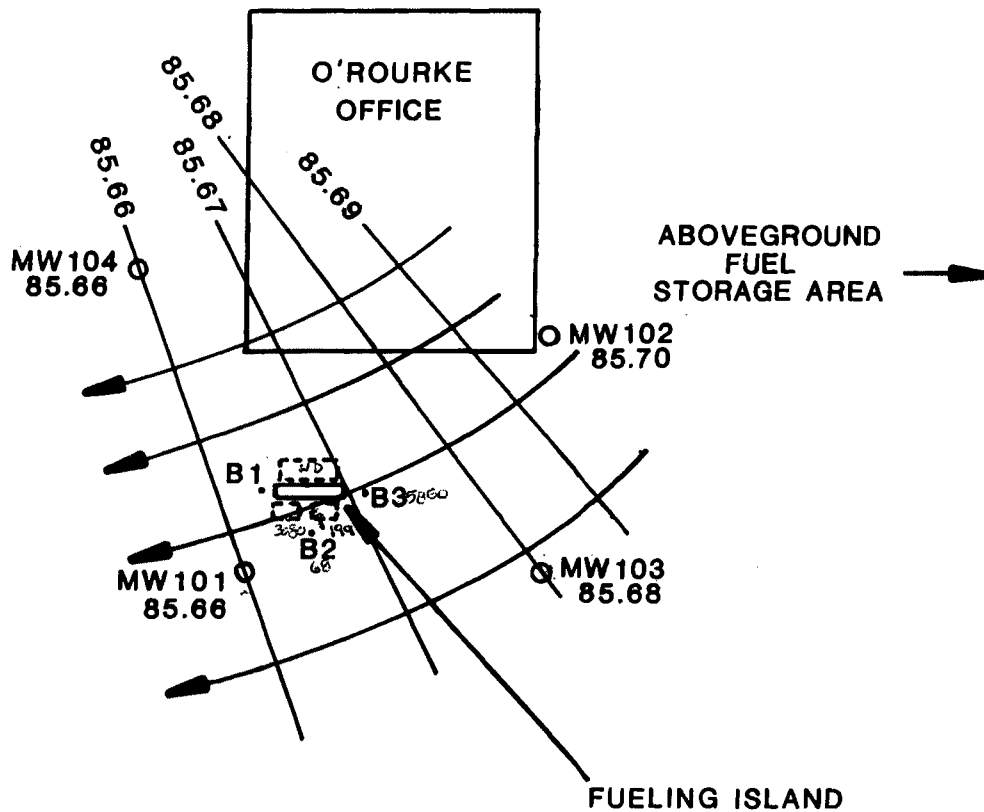
Project Number: 7-41024

Date: 10/20/04

Drawn By: SLH

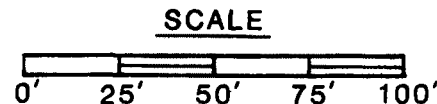


SENTRY DRIVE



EXPLANATION

- MW101 85.66 ○ Monitoring well location, designation and water level
- 85.66 — Water table contour
- Ground water flow direction



NOTE: Water level information collected March 14, 1989.
All water level information referenced to site datum.

O'ROURKE DISTRIBUTING COMPANY

SITE LAYOUT,
WATER TABLE CONFIGURATION, AND
GROUND WATER FLOW DIRECTION

PROJECT: PEI 30063

DATE: 03/21/89

▲ **Northern Environmental Technologies**
Incorporated

Table 1 Summary of Field and Laboratory Soil Analyses, O'Rourke Distributing Company, Incorporated, Waukesha, Wisconsin

Borehole Number	Sample Label	Depth (feet)	Date Collected	PID Headspace Analysis			Results of Laboratory Analysis							Soil Odor	Soil Description
				Time Collected	Time Analyzed	PID Response	MTBE (ppb)	Summation of BETX Analysis (ppb)	TPH (ppm)	GRO (ppm)	DRO (ppm)	Lead (ppm)			
B1	S1	1.0 - 3.0	03/28/91	1041	1225	0.0	-	-	-				None	Black silty clay	
	S2	3.5 - 5.5	03/28/91	1046	1225	0.0	-	-	-				None	Light brown to brown silty clay with trace fine sand	
	S3	8.0 - 8.0	03/28/91	1052	1226	0.0	-	-	ND				None	Gray to light brownish orange silty clay with trace fine sand	
	S4	8.5 - 10.5	03/28/91	1100	1226	0.0	-	-	-				None	Gray to light brownish orange silty clay with trace fine sand	
B2	S1	1.5 - 3.5	03/28/91	1125	1230	0.0	-	-	-				None	Dark brown to brown silty clay with trace fine sand	
	S2	4.0 - 8.0	03/28/91	1130	1230	0.0	-	-	-				None	Brown silty fine sand, clayey fine sand with cobbles and boulders.	
	S3	6.5 - 8.5	03/28/91	1140	1231	72.2	-	-	-				Strong petroleum	Tan to light brown silty clay, sandy clay with stones	
	S4	9.0 - 11.0	03/28/91	1152	1231	215	ND	*	40/D				Strong petroleum	Gray to charcoal gray silt, cobbles, stones with rock fragments	
	S5	11.5 - 13.5	03/28/91	1204	1232	108.3	-	-	-				Strong petroleum	Black to gray silty fine sand seems, cobbles, boulders	
B3	S1	1.0 - 3.0	03/28/91	1455	1550	0.0	-	-	-				None	Brown silty clay, cobbles and boulders	
	S2	3.5 - 5.5	03/28/91	1500	1552	0.0	-	-	-				None	Brown silty clay, cobbles and boulders	
	S3	6.0 - 8.0	03/28/91	1509	1552	0.0	-	-	ND				None	Brown silty clay, cobbles and boulders	
	S4	8.5 - 10.5	03/28/91	1514	1554	0.0	-	-	-				None	Brown to yellowish brown silty medium sand with stones and cobbles	
	S5	11.0 - 13.0	03/28/91	1526	1559	0.0	-	-	-				None	Brown to yellowish brown silty medium sand with stones and cobbles	
B4	S1	1.5 - 3.5	03/29/91	0820	1010	0.0	-	-	-				None	Brown silty clay with trace of sand, occasional cobbles	
	S2	4.0 - 6.0	03/29/91	0830	1010	0.0	-	-	-				None	Brown to light brown silty clay, sandy clay with cobbles	
	S3	6.5 - 8.5	03/29/91	0841	1010	0.0	-	-	ND				None	Brown to light brown silty clay, sandy clay with cobbles	
	S4	9.0 - 11.0	03/29/91	0858	1010	0.0	-	-	-				None	Blown to light brown silty clay, sandy clay with cobbles	
	S5	11.5 - 13.5	03/29/91	0910	1011	0.0	-	-	-				None	Brown to light brown silty clay, sandy clay with cobbles	
B5	S1	1.0 - 3.0	03/29/91	1045	1142	41.0	-	-	-				Strong petroleum	Black silty clay mixed with loamy topsoil, crushed limestone	
	S2	3.5 - 5.5	03/29/91	1050	1144	188	-	-	-				Strong petroleum	Gray to light brown some yellow silty clay with stones	
	S3	6.0 - 8.0	03/29/91	1100	1145	296	-	-	-				Strong petroleum	Gray to light brown some yellow silty clay with stones	
	S4	8.5 - 10.5	03/29/91	1110	1146	389	-	-	91/D				Strong petroleum	Brown to gray to orange and yellow silty clay seams, stones and cobbles	
B6	S1	1.5 - 3.5	03/29/91	1156	1409	11.0	-	-	ND				None	Black and brown mottled silty loamy clay with cobbles and trace sand	
	S2	4.5 - 6.5	03/29/91	1205	1410	1.0	-	-	-				None	Reddish brown and orange silty sandy clay with stones	
	S3	7.0 - 9.0	03/29/91	1211	1410	1.0	-	-	-				None	Red to dark brown silty medium sand with trace clay and cobbles	
	S4	9.5 - 10.5	03/29/91	1219	1410	0.0	-	-	-				None	Red to dark brown silty medium sand with trace clay and cobbles	
	S5	11.0 - 13.0	03/29/91	1340	1500	2.0	-	-	-				None	Brown to light brown medium to coarse sand with some silt	
B7	S1	1.5 - 3.5	03/29/91	1550	1710	234	-	-	-				Strong petroleum	Black silty clay with trace sand	
	S2	4.5 - 6.5	03/29/91	1605	1712	315	-	-	190/D				Strong petroleum	Gray and green mottled silty clay with occasional sandy silt	
	S3	7.0 - 9.0	03/29/91	1616	1715	369	ND	**	140/G				Strong petroleum	Gray and green mottled silty clay with occasional sandy silt	
	S4	9.5 - 11.5	03/29/91	1620	1720	361	-	-	-				Strong petroleum	Gray and green mottled silty clay with occasional sandy silt	
	S5	12.0 - 14.0	03/29/91	1640	1740	312	-	-	-				Strong petroleum	Gray and green mottled silty clay with occasional sandy silt	
B105	S1054	8.5 - 10.5	01/11/94	-	-	-	ND	ND	-	ND	-	6	None	Brown silty clay, sandy clay with cobbles	
	S1056	13.5 - 15.5	01/11/94	-	-	-	ND	ND	-	ND	-	-	None	Brown to yellow-brown sand with trace clay	

Table 1 Soil Sample Laboratory Analytical Results, O'Rourke Distributing Company, Incorporated, Waukesha, Wisconsin

Sample Number	Date Collected	PID (in)	Sample Depth (ftg)	Laboratory Analysis										VOC Analytes (ug/kg)											
				PAH Analytes (ng/kg)																					
				Metals	1-Methyl naphthalene	2-Methyl naphthalene	Acenaphthene	Anthracene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	Benzene	n-Butyl benzene	sec-Butyl benzene	Ethylbenzene	Isopropylbenzene	p-Isopropyltoluene	Naphthalene	n-Propylbenzene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Xylenes
Lead (mg/kg)																									
NB102	06/06/02	5	2-4	57	66"J"	<72	<41	<34	<42	<41	<40	<20	<58	230	560	190	200	<25	70	310	190	<25	510	230	660
NB107	06/06/02	82	12-14	-	-	-	-	-	-	-	-	-	-	<250	-	-	4700	-	-	-	-	370	21,000	4900	4300
NB202	06/06/02	75	2-4	-	-	-	-	-	-	-	-	-	-	<25	-	-	110	-	-	-	-	<25	310	84	<75
NB206	06/06/02	375	10-12	<3	2300	3600	<41	120	<42	320	<40	680	74"J"	43	3900	1900	770	1400	1200	<25	4300	200	1400	890	370
NB301	06/06/02	1	0-2	-	-	-	-	-	-	-	-	-	-	<25	-	-	<25	-	-	-	-	<25	<25	<25	<75
NB507	06/06/02	1	12-14	18	<37	<72	<41	<34	<42	<41	<40	<20	<58	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<75
NB602	06/06/02	1	2-4	-	-	-	-	-	-	-	-	-	-	<25	-	-	<25	-	-	-	-	<25	<25	<25	<75
NB607	06/06/02	17	12-14	<3	1000	530	450	220	47"J"	390	58"J"	730	250	<25	890	610	130	85	250	200	430	<25	320	<25	120
NB702	06/06/02	4	2-4	-	-	-	-	-	-	-	-	-	-	<25	-	-	<25	-	-	-	-	<25	<25	<25	<75
NB706	06/06/02	2	10-12	<3	<37	<72	<41	<34	<42	<41	<40	<20	<58	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<75
NB804	06/06/02	246	6-8	-	-	-	-	-	-	-	-	-	-	<25	-	-	<25	-	-	-	-	140	410	130	<75
NB807	06/06/02	372	12-14	<3	2400	3200	440	100"J"	45"J"	320	85"J"	870	100"J"	130	1800	1500	2000	810	720	240	2300	47	5700	450	510
NR 720, Wis. Adm. Code Generic RCLs				500	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	5.5	CNR	CNR	2900	CNR	CNR	CNR	CNR	1500	CNR	CNR	4100
s. NR 746.06, Wis. Adm. Code Table 1 Values				CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	8500	CNR	CNR	4600	CNR	CNR	2700	CNR	38,000	83,000	11,000	42,000
s. NR 746.06, Wis. Adm. Code Table 2 Values				CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	1100	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR

Note:

PID = photoionization detector
 iui = instrument units as isobutylene
 ftg = feet below grade
 mg/kg = milligrams per kilogram
 ug/kg = micrograms per kilogram
 VOCs = volatile organic compounds
 PAH = polycyclic aromatic hydrocarbons
 - = not laboratory analyzed
 <x = compound not detected to a detection limit of x
 CNR = currently not regulated

XXX = exceeds Chapter NR 720, Wisconsin Administrative Code (NR 720, Wis. Adm. Code) Generic Soil Residual Contaminant Levels (RCLs)

XXX = exceeds Section NR 746.06, Wisconsin Administrative Code (s. NR 746.06, Wis. Adm. Code) Table 1 Values

(XXX) = exceeds s. NR 746.06, Wis. Adm. Code Table 2 Values

Table 1 Soil Sample Laboratory Analytical Results, O'Rourke Distributing Company, Incorporated, Waukesha, Wisconsin

Sample Number	Date Collected	PID (u)	Sample Depth (ft)	PAH Analytes (ng/kg)										VOC Analytes (ug/kg)											
				Metals										VOC Analytes (ug/kg)											
				Lead (mg/kg)	1-Methyl naphthalene	2-Methyl naphthalene	Acenaphthene	Anthracene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene	Benzene	n-Butyl benzene	sec-Butyl benzene	Ethylbenzene	Isopropylbenzene	p-Isopropyltoluene	Naphthalene	n-Propylbenzene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Xylenes
NB102	06/06/02	5	2-4	57	68**	<72	<41	<34	<42	<41	<40	<20	<58	230	560	190	200	<25	70	910	150	<25	510	230	660
NB107	06/06/02	82	12-14	-	-	-	-	-	-	-	-	-	-	<250	-	-	4760	-	-	-	-	370	21,000	4900	4300
NB202	06/06/02	75	2-4	-	-	-	-	-	-	-	-	-	-	<25	-	-	110	-	-	-	-	<25	310	84	<75
NB206	06/06/02	375	10-12	<3	2300	3600	<41	120	<42	320	<40	680	74**	43	3900	1900	770	1400	1200	<25	4300	200	1400	890	370
NB501	06/06/02	1	0-2	-	-	-	-	-	-	-	-	-	-	<25	-	-	<25	-	-	-	-	<25	<25	<25	<75
NB507	06/06/02	1	12-14	18	<37	<72	<41	<34	<42	<41	<40	<20	<58	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<75
NB602	06/06/02	1	2-4	-	-	-	-	-	-	-	-	-	-	<25	-	-	<25	-	-	-	-	<25	<25	<25	<75
NB607	06/06/02	17	12-14	<3	1000	530	450	220	47**	390	58**	730	250	<25	890	610	130	85	250	200	430	<25	320	<25	120
NB702	06/06/02	4	2-4	-	-	-	-	-	-	-	-	-	-	<25	-	-	<25	-	-	-	-	<25	<25	<25	<75
NB706	06/06/02	2	10-12	<3	<37	<72	<41	<34	<42	<41	<40	<20	<58	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<75
NB804	06/06/02	246	6-8	-	-	-	-	-	-	-	-	-	-	<25	-	-	<25	-	-	-	-	140	410	130	<75
NB807	06/06/02	372	12-14	<3	2400	3200	440	100**	45**	320	85**	870	100**	130	1800	1500	2000	810	720	240	2300	47	5700	450	510
NR 720, Wis. Adm. Code Generic RCLs				500	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	5.5	CNR	CNR	2900	CNR	CNR	CNR	CNR	1500	CNR	CNR	4100
s. NR 746.06, Wis. Adm. Code Table 1 Values				CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	8500	CNR	CNR	4600	CNR	CNR	2700	CNR	38,000	83,000	11,000	42,000
s. NR 746.06, Wis. Adm. Code Table 2 Values				CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	1100	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR	CNR

Note:

PID = photoionization detector
 ui = instrument units as isobutylene
 ftg = feet below grade
 mg/kg = milligrams per kilogram
 ug/kg = micrograms per kilogram
 VOCs = volatile organic compounds
 PAH = polycyclic aromatic hydrocarbons
 - = not laboratory analyzed
 <x = compound not detected to a detection limit of x
 CNR = currently not regulated

XXX = exceeds Chapter NR 720, Wisconsin Administrative Code (NR 720, Wis. Adm. Code) Generic Soil Residual Contaminant Levels (RCLs)

XXX = exceeds Section NR 746.06, Wisconsin Administrative Code (s. NR 746.06, Wis. Adm. Code) Table 1 Values

(XXX) = exceeds s. NR 746.06, Wis. Adm. Code Table 2 Values

TABLE 1
O'Rourke Property
MES Project Number 7-41024-2, FID 268113230, BRRTS 03-68-001323
Summary of Soil Sample Analysis Results

Sample	Depth (ft)	Date Collected	FID Value	PID Value	DRO (mg/kg)	GRO (mg/kg)	Volatile Organic Compounds (ug/kg)														
							Benzene	1,2-Dichloroethane	Ethylbenzene	p-Isopropyltoluene	Naphthalene	n-Propylbenzene	Isopropylbenzene	Methyl-tert-butyl-ether	Methylene chloride	Toluene	1,2,4-Trichlorobenzene	Trichloroethene (TCE)	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes
B-1	4-6	5-27-04	na	ND	<5.49	17.3	<25.0	<25.0	104	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	328	201	472
B-1	14-16	5-27-04	na	ND	<5.55	33	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-2	0-2	5-27-04	na	3	1,060	44.9	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	488	214	<25.0
B-2	2-4	5-27-04	na	ND	65.4	7.38	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-3	0-2	5-27-04	na	ND	393	15.7	<25.0	<25.0	61.3	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	40.7	<25.0	<25.0	279	161	650
B-3	2-4	5-27-04	na	ND	<5.95	<5.95	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-4	0-2	5-27-04	na	ND	143	<5.37	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-4	8-10	5-27-04	na	ND	<5.27	<5.27	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-5	5-7	5-27-04	na	8	23.6	15.3	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	44.3	52.9	<25.0
B-5	9-11	5-27-04	na	150	753	487	107	<25.0	1,800	<25.0	<25.0	<25.0	<25.0	52.1	<25.0	492	<25.0	<25.0	7,650	239	560
B-6	1-3	5-27-04	na	65	7,410	174	288	<25.0	802	<25.0	<25.0	<25.0	<25.0	303	<25.0	192	<25.0	<25.0	6,960	2,810	5,640
B-6	9-11	5-27-04	na	7	326	31.9	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	126	61.7	66.7
B-7	7-9	5-27-04	na	ND	<5.72	<5.72	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-7	9-11	5-27-04	na	ND	<5.77	<5.72	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-8	3-5	5-28-04	na	4	25.5	<6.35	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-8	9-11	5-28-04	na	ND	<5.49	<5.49	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-9	7-9	5-28-04	na	4	392	5.65	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-10	8-10	5-28-04	na	7	<6.24	<6.24	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-11	0-2	5-28-04	na	ND	<6.52	<6.52	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-12	0-2	5-28-04	na	ND	<6.22	<6.22	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-13	0-2	5-28-04	na	ND	<6.15	<6.15	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-14	3-5	5-28-04	na	11	25.5	<5.32	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-14	7-9	5-28-04	na	ND	<5.70	<5.70	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-14	9-11	5-28-04	na	7	65.3	56.8	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	594	240	<25.0
B-15	4-6	6-04-04	na	ND	na	na	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	48.8	<25.0	29.9	<25.0	<25.0	<25.0
DNR Generic RCL (NR 720)			--	--	100	100	5.5	4.9	2,900	--	--	--	--	--	--	1,500	--	--	--	--	4,100
DNR SSL (NR 746)			--	--	--	--	8,500	600	4,600	--	2,700	--	--	--	--	38,000	--	--	83,000	11,000	42,000
DNR DCSCC (NR 746)			--	--	--	--	1,100	540	--	--	--	--	--	--	--	--	--	--	--	--	--

NOTES:

RCL = NR720 Residual Contaminant Levels
SSL = NR746 Table 1, Soil Screening Levels
DCL = Table 2, Direct Contact Levels
-- = no standard established

mg/kg = milligrams per kilogram = parts per million (ppm)
ug/kg = micrograms per kilogram = parts per billion (ppb)
ND = Not Detected

TABLE 1, continued
O'Rourke Property
MES Project Number 7-41024-2, FID 268113230, BRRTS 03-68-001323
Summary of Soil Sample Analysis Results

Sample	Depth (ft)	Date Collected	FID Value	PID Value	DRO (mg/kg)	GRO (mg/kg)	Volatile Organic Compounds (ug/kg)														
							Benzene	1,2-Dichloroethane	Ethylbenzene	p-Isopropyltoluene	Naphthalene	n-Propylbenzene	Isopropylbenzene	Methyl-tert-butyl-ether	Methylene chloride	Toluene	1,2,4-Trichlorobenzene	Trichloroethene (TCE)	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes
B-16	4-6	7-27-04	na	ND	<5.40	--	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-16	12-14	7-27-04	na	ND	<5.35	--	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-18	5-7	7-27-04	na	ND	<5.36	--	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-19	5-7	7-27-04	na	ND	<5.20	--	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-20	1-3	7-27-04	na	45	<5.25	--	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-20	3-5	7-27-04	na	ND	26	--	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	62.2	<25.0	<25.0	36.1	<25.0	93.9
B-21/MW-6	8-10	7-27-04	na	na	145	--	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-22	2-4	7-28-04	na	ND	22.1	<5.71	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-22	12-14	7-28-04	na	150	696	113	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-23	2-4	7-28-04	ND	na	17.3	<6.29	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	43.0	<25.0	<25.0	<25.0	<25.0
B-23	8-10	7-28-04	20	na	81.2	12.4	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-23	12-14	7-28-04	750	na	1,220	160	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-24	3-5	7-28-04	15	na	58.9	<6.00	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-24	8-10	7-28-04	ND	na	137	<5.24	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-25	0-2	7-28-04	5,000	na	4,500	1,640	1,050	<25.0	6,580	3,340	23,500	1,900	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	31,000	15,400	18,700
B-25	6-8	7-28-04	150	na	748	345	44.3	<25.0	2,540	527	4,540	1,560	445	<25.0	295	<25.0	<25.0	<25.0	8,690	2,540	5,180
B-26	5-7	7-28-04	375	na	16.5	13.1	<25.0	<25.0	<25.0	<25.0	99.5	<25.0	<25.0	<25.0	404	<25.0	<25.0	<25.0	134	<25.0	34.8
B-26	11-13	7-28-04	1,115	na	421	576	<25.0	<25.0	8,900	768	7,270	5,910	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	25,300	<25.0	553
B-27	2-4	7-29-04	68	na	1,580	28	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-27	10-12	7-29-04	105	na	138	86.3	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	249	<25.0	<25.0
B-28	3-5	8-3-04	na	ND	30.4	<5.28	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-28	10-12	8-3-04	na	ND	<5.26	<5.26	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-29	10-12	8-3-04	na	ND	<5.20	<5.20	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
B-30	9-11	8-3-04	na	ND	18.9	<5.21	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
DNR Generic RCL (NR 720)			--	--	100	100	5.5	4.9	2,900	--	--	--	--	--	--	1,500	--	--	--	--	4,100
DNR SSL (NR 746)			--	--	--	--	8,500	600	4,600	--	2,700	--	--	--	--	38,000	--	--	83,000	11,000	42,000
DNR DCSCC (NR 746)			--	--	--	--	1,100	540	--	--	--	--	--	--	--	--	--	--	--	--	--

NOTES:

RCL = NR720 Residual Contaminant Levels
SSL = NR746 Table 1, Soil Screening Levels
DCL = Table 2, Direct Contact Levels
-- = no standard established

mg/kg = milligrams per kilogram = parts per million (ppm)
ug/kg = micrograms per kilogram = parts per billion (ppb)
ND = Not Detected

TABLE 2
O'Rourke Property
MES Project Number 7-41024-2, FID 268113230, BRTS 03-68-001323
Summary of Soil Sample Analysis Results

		Polynuclear Aromatic Hydrocarbons (ug/kg)																	
Boring	Depth	Acenaphthene	Acenaphthylene	Anthracene	Benzo (a) anthracene	Benzo (a) pyrene	Benzo(b) fluoranthene	Benzo (ghi) perylene	Benzo (k) fluoranthene	Chrysene	Dibenz (ah) anthracene	Fluoranthene	Fluorene	Indeno (123-cd) pyrene	1-Methyl naphthalene	2-Methyl naphthalene	Naphthalene	Phenanthrene	Pyrene
B-16	4-6	<108	<216	<108	<54.0	15	<54.0	<108	<108	<108	<5.40	<108	<108	<54.0	<108	<108	<108	<108	<108
B-18	5-7	<107	<214	<107	<53.6	<5.36	<53.6	<107	<107	<107	<5.36	<107	<107	<53.6	<107	<107	<107	<107	<107
B-19	5-7	<104	<208	<104	<52.0	<5.20	<52.0	<104	<104	<104	<5.20	<104	<104	<52.0	<104	<104	<104	<104	<104
B-20	1-3	<105	<210	<105	<52.5	<5.25	<52.5	<105	<105	<105	<5.25	<105	<105	<52.5	<105	<105	<105	<105	<105
B-20	3-5	<111	<222	<111	<55.6	<5.56	<55.6	<111	<111	<111	<5.56	<111	<111	<55.6	<111	<111	<111	<111	<111
B-22	2-4	<116	<231	<116	<57.9	22.3	<57.9	<116	<116	<116	<5.79	<116	<116	<57.9	<116	<116	<116	<116	<116
B-23	2-4	<108	<215	<108	<53.8	<5.38	<53.8	<108	<108	<108	<5.38	<108	<108	<53.8	<108	<108	<108	<108	<108
B-23	8-10	<126	<252	<62.9	<6.29	<62.9	<126	<126	<126	<6.29	<126	<126	<126	<62.9	<126	<126	<126	<126	<126
B-23	12-14	175	<208	177	275	<5.20	<52.0	<104	<104	131	<5.20	685	166	<52.0	346	<104	<104	211	239
B-24	3-5	<109	<218	<109	<54.5	13	<54.5	<109	<109	<109	<5.45	<109	<109	<54.5	<109	<109	<109	<109	<109
B-25	0-2	500	1,600	1,410	1,440	8.69	<62.2	<124	<124	1,410	<6.22	4,120	2,310	<62.2	22,500	18,200	3,240	3,420	1,510
B-25	6-8	<105	<211	164	149	<5.27	<52.7	<105	<105	<105	<5.27	540	310	<52.7	2,650	2,200	554	540	195
B-26	5-7	<122	<244	<122	<61.1	<6.11	<61.1	<122	<122	<122	<6.11	<122	<122	<61.1	<122	<122	<122	<122	<122
RCL-Groundwater Pathway		38,000	700	3,000,000	17,000	48,000	360,000	6,800,000	870,000	37,000	38,000	500,000	100,000	680,000	23,000	20,000	400	1,800	8,700,000
RCL - Direct Contact (Industrial)		60,000,000	360,000	30,000,000	3,900	390	3,900	39,000	39,000	390,000	390	40,000,000	40,000,000	3,900	70,000,000	40,000,000	110,000	390,000	30,000,000

Notes:
RCL = DNR Suggested Generic Residual Contaminant Levels
-- = no standard established
ug/kg = micrograms per kilogram = parts per billion (ppb)

Bolded #s above RCL-Groundwater Pathway Standards
Underlined #s above RCL-Direct Contact Industrial Pathway Standards

TABLE 3
Former O'Rourke Distributing, Waukesha, WI
MES Project Number 7-111019, FID 268113230, BRRTS 03-68-558431
SUMMARY OF SOIL SAMPLE ANALYSIS RESULTS

Sample Location	Depth (ft)	Date Collected	PID Value	GRO (mg/kg)	Petroleum Volatile Organic Compounds (ug/kg)							
					Benzene	Ethylbenzene	Methyl-tert-butyl-ether	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Naphthalene	Total Xylenes
SW-1	8	1/30/12	100	<3.1	<25	<25	<25	<25	<25	<25	<25	94.9J
SW-2	5	1/30/12	150	<2.8	<25	<25	<25	<25	<25	<25	<25	<75
SW-3	5	1/30/12	150	<2.9	<25	<25	<25	<25	<25	<25	<25	<75
SW-4	5	1/31/12	ND	<2.6	<25	<25	<25	<25	<25	<25	<25	<75
SW-5	10	1/31/12	ND	<2.6	<25	<25	<25	<25	<25	<25	<25	<75
SW-6	8	1/31/12	ND	<2.6	<25	<25	<25	<25	26.3J	<25	<25	<75
SW-7	7	1/31/12	ND	<2.7	<25	<25	<25	<25	<25	<25	<25	<75
SW-8	5	1/31/12	ND	<2.6	<25	<25	<25	<25	<25	<25	<25	<75
SW-9	7	1/31/12	ND	<2.7	<25	<25	<25	<25	<25	<25	<25	<75
SW-10	8	1/31/12	ND	<2.6	<25	<25	<25	<25	<25	<25	<25	<75
SW-11	8	1/31/12	ND	<2.6	<25	<25	<25	<25	<25	<25	<25	<75
SW-12	10	1/31/12	ND	<2.7	<25	<25	<25	<25	<25	<25	<25	<75
B-1	12	1/31/12	ND	<2.7	<25	<25	<25	<25	<25	<25	<25	<75
B-2	12	1/31/12	ND	<2.7	<25	<25	<25	<25	<25	<25	<25	<75
B-3	12	1/31/12	20	<2.8	<25	<25	<25	<25	<25	<25	40.4J	<75
B-4	12	1/31/12	20	5.6	<25	<25	<25	<25	<25	<25	359	<75
NR720 Generic RCL				100	5.5	2,900	--	1,500	--	--	--	4,100
NR 746 SSL				--	8,500	4,600	--	38,000	--	--	2,700	42,000
NR 746 DCL				--	1,100	--	--	--	--	--	--	--

NOTES:

RCL = NR720 Residual Contaminant Levels
SSL = NR746 Table 1, Soil Screening Levels
DCL = Table 2, Direct Contact Levels
-- = no standard established

mg/kg = milligrams per kilogram = parts per million (ppm)
ug/kg = micrograms per kilogram = parts per billion (ppb)
ND = Not Detected
J = Result was estimated by laboratory but is less than the adjusted reporting limit

TABLE 3, CONTINUED
Former O'Rourke Distributing, Waukesha, WI
MES Project Number 7-111019, FID 268113230, BRRTS 03-68-558431
SUMMARY OF SOIL SAMPLE ANALYSIS RESULTS

Sample Location	Depth (ft)	Date Collected	PID Value	DRO (mg/kg)	Petroleum Volatile Organic Compounds (ug/kg)							
					Benzene	Ethylbenzene	Methyl-tert-butyl-ether	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Naphthalene	Total Xylenes
X-2, SW-1	8	1/31/12	ND	<0.85	<25	<25	<25	<25	<25	<25	<25	<75
X-2, SW-2	9	1/31/12	ND	39.5	<25	<25	<25	<25	<25	<25	<25	<75
X-2, SW-3	10	1/31/12	ND	<0.9	<25	<25	<25	<25	<25	<25	<25	<75
X-2, SW-4	10	2/1/12	ND	<0.9	<25	<25	<25	<25	<25	<25	<25	<75
X-2, SW-5	6	2/1/12	ND	<1.1	<25	<25	<25	<25	<25	<25	<25	<75
X-2, SW-7	9	1/31/12	ND	1.6J	<25	<25	<25	<25	<25	<25	<25	<75
X-2, SW-8	8	1/31/12	ND	4.5	<25	<25	<25	<25	<25	<25	<25	<75
X-2, SW-9	7	1/31/12	ND	18.9	<25	<25	<25	<25	<25	<25	<25	<75
X-2, SW-10	10	2/1/12	ND	<0.87	<25	<25	<25	<25	<25	<25	<25	<75
X-2, B-1	12	1/31/12	ND	7.1	75.1J	55.6J	<25	334	184	59.3J	106	576
X-2, B-2	12	1/31/12	ND	12.9	<25	<25	<25	<25	70.4	29.4J	93.4	<75
NR720 Generic RCL				100	5.5	2,900	--	1,500	--	--	--	4,100
NR 746 SSL				--	8,500	4,600	--	38,000	--	--	2,700	42,000
NR 746 DCL				--	1,100	--	--	--	--	--	--	--

NOTES:

RCL = NR720 Residual Contaminant Levels
SSL = NR746 Table 1, Soil Screening Levels
DCL = Table 2, Direct Contact Levels
-- = no standard established

mg/kg = milligrams per kilogram = parts per million (ppm)
ug/kg = micrograms per kilogram = parts per billion (ppb)
ND = Not Detected
J = Result was estimated by laboratory but is less than the adjusted reporting limit

TABLE 3, CONTINUED
Former O'Rourke Distributing, Waukesha, WI
MES Project Number 7-111019, FID 268113230, BRRTS 03-68-558431
SUMMARY OF SOIL SAMPLE ANALYSIS RESULTS

Sample Location	Depth (ft)	Date Collected	PID Value	DRO (mg/kg)	GRO (mg/kg)	Volatile Organic Compounds (ug/kg)							
						Benzene	Ethylbenzene	Methyl-tert-butyl-ether	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Naphthalene	Total Xylenes
D-1	3	1/31/12	170	1,030	649	<250	327J	<250	<250	2,350	3,470	15,100	<750
D-2	3	1/31/12	500	NA	46.5	149	630	<25	886	2,500	1,110	1,350	2,421
D-3	3	1/31/12	1,000	NA	204	<62.5	1,540	<62.5	165J	11,600	4,740	1,930	10,070
D-4	3	1/31/12	ND	17.6	NA	<25	<25	<25	<25	<25	<25	<25	<75
NR720 Generic RCL				100	100	5.5	2,900	--	1,500	--	--	--	4,100
NR 746 SSL				--	--	8,500	4,600	--	38,000	--	--	2,700	42,000
NR 746 DCL				--	--	1,100	--	--	--	--	--	--	--

NOTES:

RCL = NR720 Residual Contaminant Levels

SSL = NR746 Table 1, Soil Screening Levels

DCL = Table 2, Direct Contact Levels

-- = no standard established

mg/kg = milligrams per kilogram = parts per million (ppm)

ug/kg = micrograms per kilogram = parts per billion (ppb)

ND = Not Detected

J = Result was estimated by laboratory but is less than the adjusted reporting limit

Table 2 Summary of Ground-Water Quality Data, O'Rourke Distributing Company, Incorporated, Waukesha, Wisconsin

Well ID	Sample Date	Concentrations of Volatile Organic Compounds (micrograms per liter)																			
		Oil and Grease	DRO	GRO	Benzene	Ethylbenzene	Toluene	Xylenes	MTBE	Total Trimethylbenzene	n-Butylbenzene	sec-Butylbenzene	1,1 Dichloroethane	cis-1,2-Dichloroethene	Isopropylbenzene	Naphthalene	n-Propylbenzene	Tetrachloroethene	1,1,1 Trichloroethane	Trichloroethene	Lead
MW1	04/08/91	-	-	-	<1.0	<1.0	<1.0	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	06/11/91	-	-	-	5.0	<1.0	<1.0	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	<2.0
	03/11/94	-	240	<100	<0.6	<1.0	<1.0	<2.5	<1.0	<1.0	-	-	-	-	-	-	-	-	-	-	-
	11/03/95	-	360	<100	13	6.3	<1.0	<2.5	7.3	1.6	-	-	-	-	-	-	-	-	-	-	-
	03/29/96	-	340	<100	<0.22	<0.9	<1	<2.1	1.7	<1	-	-	-	-	-	-	-	-	-	-	-
	06/12/96	-	300	<100	<0.7	<0.7	<1	<2	7.8	<1	-	-	-	-	-	-	-	-	-	-	-
	12/23/96	-	340	<100	1.3	<0.7	<1	<2	6.4	<1	-	-	-	-	-	-	-	-	-	-	-
	04/17/97	-	<100	<100	<0.21	<0.68	<1.5	<1.8	0.94	<1	-	-	-	-	-	-	-	-	-	-	-
	08/07/97	-	-	-	1.6	<0.68	<1.5	<1.8	13	<1	-	-	-	-	-	-	-	-	-	-	-
	01/16/98	-	-	-	0.32 "J"	<0.68	<1.5	<1.8	0.74	<1	-	-	-	-	-	-	-	-	-	-	-
	07/22/98	-	-	-	<0.32	<0.34	<0.35	<1	2.7	<0.35	-	-	-	-	-	<0.046	-	-	-	-	-
	10/29/98	-	-	-	<0.32	<0.34	<0.35	0.98	2.5	<0.35	-	-	-	-	-	-	-	-	-	-	-
	01/20/99	-	-	-	<0.32	<0.34	<0.35	<1	<0.31	<0.35	-	-	-	-	-	-	-	-	-	-	-
	07/13/99	-	-	-	<0.32	<0.34	<0.35	<1	2.1	<0.35	-	-	-	-	-	-	-	-	-	-	-
	10/12/99	-	-	-	<0.32	<0.34	<0.35	<1	0.51 "J"	<0.35	-	-	-	-	-	-	-	-	-	-	-
	01/06/00	-	-	-	<0.32	<0.34	0.41 "J"	<1	0.68 "J"	<0.35	-	-	-	-	-	<0.59	-	-	-	-	-
	05/02/00	-	-	-	<0.32	<0.34	<0.37	<1	<0.47	<0.6	<0.43	<0.48	0.9 "J"	<0.37	<0.38	<0.53	<0.42	<0.49	<0.49	<0.49	-
MW2	04/08/91	-	-	-	<1.0	<1.0	<1.0	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	2.0
	03/11/94	-	<100	<100	<0.6	<1.0	<1.0	<2.5	<1.0	<1.0	-	-	-	-	-	-	-	-	-	-	-
	11/03/95	-	<100	<100	<0.6	<0.57	<1.0	<2.5	<1.2	<1.0	-	-	-	-	-	-	-	-	-	-	-
	03/29/96	-	<100	<100	<0.22	<0.9	<1	<2.1	<0.44	<1	-	-	-	-	-	-	-	-	-	-	-
	06/12/96	-	<100	<100	<0.7	<0.7	<1	<2	<0.5	<1	-	-	-	-	-	-	-	-	-	-	-
MW3	04/08/91	-	-	-	<1.0	<1.0	<1.0	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	<2.0
	03/11/94	-	<100	<100	<0.6	<1.0	<1.0	<2.5	<1.0	<1.0	-	-	-	-	-	-	-	-	-	-	-
	11/03/95	-	<100	<100	<0.6	<0.57	<1.0	<2.5	<1.2	<1.0	-	-	-	-	-	-	-	-	-	-	-
	03/29/96	-	<100	<100	<0.22	<0.9	<1	<2.1	<0.44	<1	-	-	-	-	-	-	-	-	-	-	-
	06/12/96	-	<100	<100	<0.7	<0.7	<1	<2	<0.5	<1	-	-	-	-	-	-	-	-	-	-	-
	12/23/96	-	<100	<100	<0.082	<0.32	<0.69	<0.9	<0.069	<0.57	<0.45	<0.49	<0.27	<0.29	<0.36	0	<0.41	<0.17	<0.63	<0.055	-
	07/22/98	-	-	-	<0.32	<0.34	<0.35	<1	<31	<64	-	-	-	<0.046	-	-	-	-	-	-	-
MW4	04/08/91	-	-	-	3000 B	1100 B	270 B	3600 B	-	-	-	-	-	-	-	-	-	-	-	-	<2.0
	06/11/91	-	-	-	2000	1200	210	2700	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/03/95	-	7300	4300	1000	290	80	1200	90	151	-	-	-	-	-	-	-	-	-	-	-
	03/29/96	-	9900	4500	980	180	58	1200	79	149	-	-	-	-	-	-	-	-	-	-	-
	06/12/96	-	6400	5000	840	440	58	1800	83	189	-	-	-	-	-	-	-	-	-	-	-
	12/23/96	-	6300	7700	670	390	60	1200	36	193	-	-	-	-	-	-	-	-	-	-	-
	04/17/97	-	6900	<10000	660	298	<150	1020	31	307	-	-	-	-	-	-	-	-	-	-	-
	08/07/97	-	-	-	750	450	50	1400	24	202	-	-	-	-	-	-	-	-	-	-	-
	01/16/98	-	-	-	900	380	<150	790	<21	120	-	-	-	-	-	-	-	-	-	-	-
	07/22/98	-	-	-	710	390	52 "J"	660	19 "J"	171	-	-	-	-	-	67	-	-	-	-	-
	10/29/98	-	-	-	840	560	<35	720	<31	255	-	-	-	-	-	-	-	-	-	-	-
	01/20/99	-	-	-	640	460	46	470	<3.1	194	-	-	-	-	-	-	-	-	-	-	-
	07/13/99	-	-	-	620	590	51	300	12	232	-	-	-	-	-	-	-	-	-	-	-
	10/12/99	-	-	-	620	600	48	200	7.2 "J"	241	-	-	-	-	-	-	-	-	-	-	-
	01/06/00	-	-	-	600	540	46	150	11	237	-	-	-	-	-	42	-	-	-	-	-
	05/02/00	-	-	-	560	730	46	152	8.7 "J"	239	29	8.1 "J"	<3.5	<3.7	10 "J"	120	15	<3.4	<5.4	<4.6	-
	MW101	11/03/95	-	100	1400	<0.6	22	1.5	280	<1.2	237	-	-	-	-	-	-	-	-	-	-
03/29/96		-	1500	2000	1.60	19	2.2	261	<0.44	260	-	-	-	-	-	-	-	-	-	-	-
06/12/96		-	6200	2200	1.90	10	2.1	130	<0.5	236	-	-	-	-	-	-	-	-	-	-	-
12/23/96		-	2600	2500	2.30	23	1.7	290	1.8	370	-	-	-	-	-	-	-	-	-	-	-
04/17/97		-	2200	1300	1.20	9	<1.5	104	<0.21	166	-	-	-	-	-	-	-	-	-	-	-
08/07/97		-	-	-	<0.21	3.4	<1.5	29	<0.21	48.3	-	-	-	-	-	-	-	-	-	-	-
01/16/98		-	-	-	<1.1	12	<7.5	140	<1.1	271	-	-	-	-	-	-	-	-	-	-	-
07/22/98		-	-	-	1.70	16	1.2 "J"	170	<0.31	226	-	-	-	-	-	38	-	-	-	-	-
10/29/98		-	-	-	1.50	27	<0.35	210	<0.31	358	-	-	-	-	-	-	-	-	-	-	-
01/20/99		-	-	-	<4.9 "J"	52	<35	560	13	1140	-	-	-	-	-	-	-	-	-	-	-
07/13/99		-	-	-	4.10	38	1.7	200	3.5	610	-	-	-	-	-	-	-	-	-	-	-
10/12/99		-	-	-	3.1 "J"	26	2.6 "J"	130	3.8 "J"	374	-	-	-	-	-	-	-	-	-	-	-
01/06/00		-	-	-	5.2 "J"	18	5.4 "J"	140	7.1	431	-	-	-	-	-	41	-	-	-	-	-
05/02/00		-	-	-	0.85 "J"	12	<0.37	72	0.68 "J"	172	20	5.4	<0.35	0.4 "J"	3.8	18	10	<0.34	<0.54	<0.46	-

Table 2 Summary of Ground-Water Quality Data, O'Rourke Distributing Company, Incorporated, Waukesha, Wisconsin

Well ID	Sample Date	Concentrations of Volatile Organic Compounds (micograms per liter)																			Lead
		Oil and Grease	DRO	GRO	Benzene	Ethylbenzene	Toluene	Xylenes	MTBE	Total Trimethylbenzene	n-Butylbenzene	sec-Butylbenzene	1,1 Dichloroethane	cis-1,2-Dichloroethene	Isopropylbenzene	Naphthalene	n-Propylbenzene	Tetrachloroethene	1,1,1 Trichloroethane	Trichloroethene	
MW102	04/08/91	-	-	-	<1.0	<1.0	<1.0	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	3.2
	06/11/91	-	-	-	3.90	7.0	2.5	<3.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	03/11/94	-	140	100	10	<1.0	<1.0	<2.5	<1.0	<1.0	-	-	-	-	-	-	-	-	-	-	-
	11/03/95	-	2200	<100	7	3.2	<1.0	<2.5	<1.2	1.9	-	-	-	-	-	-	-	-	-	-	-
	03/29/96	-	240	<100	0.95	<0.9	<1	<2.1	<0.44	<1	-	-	-	-	-	-	-	-	-	-	-
	06/12/96	-	150	<100	4.50	0.79	<1	<2	<0.5	<1	-	-	-	-	-	-	-	-	-	-	-
	12/23/96	-	<100	<100	1.10	<0.7	<1	<2	<0.5	<1	-	-	-	-	-	-	-	-	-	-	-
	04/17/97	-	220	<100	1.10	<0.68	<1.5	<1.8	<0.21	<1	-	-	-	-	-	-	-	-	-	-	-
	08/07/97	-	-	-	<0.21	<0.68	<1.5	<1.8	<0.21	<1	-	-	-	-	-	-	-	-	-	-	-
	01/16/98	-	-	-	1.10	<0.68	<1.5	<1.8	<0.21	<1	-	-	-	-	-	-	-	-	-	-	-
	07/22/98	-	-	-	<0.32	<0.34	<0.35	<1	<0.31	<0.64	-	-	-	-	-	<0.054	-	-	-	-	-
	10/29/98	-	-	-	<0.32	<0.34	<0.35	<0.98	<0.31	0.79 "J"	-	-	-	-	-	-	-	-	-	-	-
	01/20/99	-	-	-	0.44 "J"	<0.34	<0.35	<1	<0.31	<0.64	-	-	-	-	-	-	-	-	-	-	-
	07/13/99	-	-	-	<0.32	<0.34	<0.35	<1	<0.31	<0.64	-	-	-	-	-	-	-	-	-	-	-
	10/12/99	-	-	-	<0.32	<0.34	<0.35	<1	<0.31	<0.64	-	-	-	-	-	-	-	-	-	-	-
	01/06/00	-	-	-	0.41 "J"	<0.34	0.51 "J"	<1	<0.31	<0.64	-	-	-	-	-	<0.59	-	-	-	-	-
	05/02/00	-	-	-	<0.39	<0.4	<0.37	<1	0.57 "J"	<0.63	0.59 "J"	<0.48	0.86 "J"	<0.37	<0.38	<0.57	<0.42	3.5	1.7 "J"	1.2 "J"	-
MW103	03/11/94	-	7200	990	14	<1.0	1.2	<2.5	<1.0	3.0	-	-	-	-	-	-	-	-	-	-	-
	11/03/95	-	710	<100	19	<0.57	<1.0	<2.5	4.1	<1.0	-	-	-	-	-	-	-	-	-	-	-
	03/29/96	-	1400	250	19	<0.9	1.2	<2.1	0.96	<1	-	-	-	-	-	-	-	-	-	-	-
	06/12/96	-	1900	<100	7	<0.7	<1	<2	4.6	<1	-	-	-	-	-	-	-	-	-	-	-
	12/23/96	-	1000	200	35	<0.7	<1	<2	7.8	<1	-	-	-	-	-	-	-	-	-	-	-
	04/17/97	-	1100	200	19	<0.68	<1.5	<1.8	3.7	<1	-	-	-	-	-	-	-	-	-	-	-
	08/07/97	-	-	-	27	<0.68	<1.5	<1.8	8.4	<1	-	-	-	-	-	-	-	-	-	-	-
	01/16/98	-	-	-	15	<0.68	<1.5	<1.8	3.5	<1	-	-	-	-	-	-	-	-	-	-	-
	07/22/98	-	-	-	12	<0.34	0.62 "J"	<1	5.7	<0.64	-	-	-	-	-	<0.046	-	-	-	-	-
	10/29/98	-	-	-	23	0.35 "J"	<0.35	<0.98	7.7	0.81 "J"	-	-	-	-	-	-	-	-	-	-	-
	01/20/99	-	-	-	16	0.34	<0.35	<1	1.2	0.6 "J"	-	-	-	-	-	-	-	-	-	-	-
	07/13/99	-	-	-	22	0.34	0.55 "J"	<1	15	<0.64	-	-	-	-	-	-	-	-	-	-	-
	10/12/99	-	-	-	48	<0.34	0.8 "J"	<1	22	<0.64	-	-	-	-	-	-	-	-	-	-	-
	01/06/00	-	-	-	19	0.37 "J"	0.8 "J"	<1	1.5	1.2 "J"	-	-	-	-	-	-	-	-	-	-	-
	05/02/00	-	-	-	8.6	<0.4	<0.37	<1	<0.47	<0.63	1.6	1.1 "J"	1 "J"	0.65 "J"	2.7	<0.53	2.3	<0.34	<0.54	<0.46	-
MW104	03/11/94	-	-	<100	<0.6	<1.0	<1.0	<2.5	<1.0	<1.0	-	-	-	-	-	-	-	-	-	-	-
	11/03/95	-	<100	<100	<0.6	<0.57	<1.0	<2.5	<1.2	<1.0	-	-	-	-	-	-	-	-	-	-	-
	03/29/96	-	<100	<100	<0.22	<0.9	<1	<2.1	<0.44	<1	-	-	-	-	-	-	-	-	-	-	-
	06/12/96	-	<100	<100	<0.7	<0.7	<1	<2	<0.5	<1	-	-	-	-	-	-	-	-	-	-	-
	12/23/96	-	<100	<100	<0.7	<0.7	<1	<2	<0.5	<1	-	-	-	-	-	-	-	-	-	-	-
	07/22/98	-	-	-	<0.32	<0.34	<0.35	<1	<0.31	<0.64	-	-	-	-	-	<0.046	-	-	-	-	-
MW105	03/03/94	-	140	<100	<0.6	<1.0	<1.0	<2.5	<1.0	<1.0	<2.0	<1.0	2.5	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	20
	11/03/95	-	<100	<100	<0.6	<0.57	<1.0	<2.5	1.2	<1.0	-	-	-	-	-	-	-	-	-	-	-
	03/29/96	-	<100	<100	<0.22	<0.9	<1	<2.1	0.46	<1	-	-	-	-	-	-	-	-	-	-	-
	03/29/96	-	<100	<100	<0.22	<0.9	<1	2.1	0.47	<1	-	-	-	-	-	-	-	-	-	-	-
	06/12/96	-	<100	<100	<0.7	<0.7	<1	<2	<0.5	<1	-	-	-	-	-	-	-	-	-	-	-
	12/23/96	-	<100	<100	<0.7	<0.7	<1	<2	0.86	<1	-	-	-	-	-	-	-	-	-	-	-
	07/22/98	-	-	-	<0.32	<0.34	<0.35	<1	<0.31	<0.64	-	-	-	-	-	<0.046	-	-	-	-	-
	01/06/00	-	-	-	<0.32	<0.34	<0.35	<1	<0.31	<0.64	-	-	-	-	-	<0.046	-	-	-	-	-
	05/02/00	-	-	-	<0.39	<0.4	<0.37	<1	<0.47	<0.63	<0.43	<0.48	<0.35	0.41 "J"	<0.38	<0.53	<0.42	3.2	0.68 "J"	0.54 "J"	-
Sump 1	03/03/94	-	-	-	<0.6	<1.0	<1.0	<2.5	<1.0	<1.0	<2.0	<1.0	2.6	<1.0	<1.0	<2.0	<1.0	3.0	6.7	2.4	-
	05/31/94	<3000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/03/95	-	<100	<100	<0.26	<0.32	<0.69	<0.9	<0.22	<0.57	<0.45	<0.49	0.63	<0.29	<0.36	<0.41	<0.41	4.2	1.85	0.5	-
	12/08/97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1 "J"
Sump 2	03/11/94	-	1800	430	3.60	2.5	2.7	1.2	<1.0	4.2	4.1	2.9	2.7	<1.0	2.2	<2.0	5.9	11	6.3	2.2	1
	05/31/94	<3000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/03/95	-	680	<100	3.06	<0.32	1.44	<0.9	1.05	1.02	<0.45	<0.49	1.62	0.4	<0.36	<0.41	<0.41	9	3.8	1.29	-
	12/29/95	-	-	-	11	<0.32	<0.69	<0.9	1.7	6.6	3.0	1.9	2.2	0.81	2.6	<1.1	6.5	11	3.6	1.3	-
	12/08/97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2000

TABLE 2 (Page 1 of 2)
Former O'Rourke Distribution Company
Summary of Groundwater Sample Results
MES Project Number 7-41024-2, FID 268113230, BRRTS 03-68-001323

Well	Date Collected	Volatile Organic Compounds (ug/L)																		
		Benzene	Bromodichloromethane	Chloroform	tert-Butylbenzene	Isopropylbenzene	Ethylbenzene	n-Butylbenzene	n-Propylbenzene	sec-Butylbenzene	1,2-Dibromo-3-chloropropane	Total TMBs	Methylene chloride	Tetrachloroethene	1,2-Dibromoethane	Trichloroethene	p-Isopropyltoluene	MTBE	Naphthalene	Total Xylenes
MW-101	8/5/2004	2.82	<0.284	<0.299	<5.00	<5.00	6.67	<5.00	10.20	<5.00	<0.894	35.80	4.26	1.08	<0.478	<0.232	<5.00	<0.317	19.0	5.66
MW-102	8/5/2004	<0.291	<0.284	<0.299	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<0.894	<5.00	15.60	3.57	<0.478	1.34	<5.00	<0.317	<8.00	<5.00
MW-103 Dup	8/5/2004	<0.291	<0.284	<0.299	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<0.894	<5.00	15.80	<0.364	<0.478	<0.232	<5.00	<0.317	<8.00	<5.00
	8/5/2004	<0.291	<0.284	<0.299	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<0.894	<5.00	18.80	<0.364	<0.778	<0.232	<5.00	<0.317	<8.00	<5.00
MW-104	8/5/2004	<0.291	<0.284	<0.299	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<0.894	<5.00	16.60	<0.364	<0.478	<0.232	<5.00	<0.317	<8.00	<5.00
MW-105	5/2/2000	<0.39	na	na	na	<0.38	<0.4	<0.43	<0.42	<0.48	na	<0.63	na	3.20	na	0.54J	na	<0.47	<0.53	<1
MW-1	5/2/2000	<0.32	na	na	na	<0.38	<0.34	<0.43	<0.42	<0.48	na	<0.6	na	<0.49	na	<0.49	na	<0.47	<0.53	<1
MW-2	6/12/1996	<0.7	na	na	na	na	<0.7	na	na	na	na	<1	na	na	na	na	na	<0.5	na	<2
MW-3	7/22/1998	<0.291	<0.284	<0.299	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<0.894	<5.00	18.40	<0.364	<0.478	<0.232	<5.00	<0.317	<8.00	<5.00
MW-4	8/5/2004	250	<0.284	<0.299	23.40	10.30	741	<5.00	13.20	<5.00	<0.894	228.40	25.20	<0.364	<0.478	<0.232	<5.00	<0.317	126	72.50
MW-5	8/5/2004	<0.291	<0.284	<0.299	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<0.894	<5.00	15.50	<0.364	<0.478	<0.232	<5.00	<0.317	<8.00	<5.00
MW-6	8/5/2005	<0.291	<0.284	<0.299	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<0.894	14.70	17.90	<0.364	<0.478	<0.232	<5.00	<0.317	<8.00	<5.00
Trip Blank	8/5/2004	<0.291	<0.284	<0.299	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00	<0.894	<5.00	3.52	<0.364	<0.478	<0.232	<5.00	<0.317	<8.00	<5.00
DNR PAL		0.5	0.06	0.6	--	--	140	--	--	--	0.02	96	0.5	0.5	0.005	0.5	--	12	8	1,000
DNR ES		5	0.6	6	--	--	700	--	--	--	0.2	480	5	5	0.05	5	--	60	40	10,000

NOTES:

DNR PAL = NR140 Preventive Action Limit

DNR ES = NR140 Enforcement Standard

-- = no standard established

Total TMBs = Total Trimethylbenzenes

Underlined number indicates concentration exceeds the DNR PAL

Bold number indicates concentration exceeds the DNR ES

ug/L = micrograms per liter = parts per billion (ppb)

na = not analyzed

TABLE 2 (Page 2 of 2)
Former O'Rourke Distribution Company
PAH Groundwater Laboratory Analysis Results
MES Project Number 7-41024-2, FID 268113230, BRRTS 03-68-001323

Well	Date	Fluoranthene	Benz (a) anthracene	Benzo (a) pyrene	Benzo (ghi) perylene	Benzo (k) fluoranthene	Benzo(b) fluoranthene	Chrysene	Dibenzo (a,h) anthracene	Phenanthrene	Pyrene	Anthracene	Indeno (1, 2, 3 - cd) pyrene	Naphthalene
MW-103	8/5/2004	<5.00	<0.100	<u>0.023</u>	<5.00	<0.100	<0.0200	<0.0200	<0.100	<5.00	<5.00	<5.00	<0.200	<5.00
MW-104	8/5/2004	<5.00	<0.100	<0.0200	<5.00	<0.100	<0.0200	<0.0200	<0.100	<5.00	<5.00	<5.00	<0.200	<5.00
MW-3	8/5/2004	<5.00	<0.100	<0.0200	<5.00	<0.100	<0.0200	<0.0200	<0.100	<5.00	<5.00	<5.00	<0.200	<5.00
MW-4	8/5/2004	<5.00	<0.100	<0.0200	<5.00	<0.100	<0.0200	<0.0200	<0.100	<5.00	<5.00	<5.00	<0.200	<5.00
MW-5	8/5/2004	<5.00	<0.100	<0.0200	<5.00	<0.100	<0.0200	<0.0200	<0.100	<5.00	<5.00	<5.00	<0.200	<5.00
Duplicate	8/5/2004	<5.00	<0.100	<0.0200	<5.00	<0.100	<0.0200	<0.0200	<0.100	<5.00	<5.00	<5.00	<0.200	<5.00
MW-6	8/5/2004	<5.00	0.254	<0.0200	<5.00	<0.100	<0.0200	<0.0200	<0.100	<5.00	<5.00	<5.00	<0.200	<5.00
DNR PAL		80	--	0.02	--	--	0.02	0.02	--	--	50	600	--	8
DNR ES		400	--	0.2	--	--	0.2	0.2	--	--	250	3000	--	40

NOTES:

DNR PAL = NR140 Preventive Action Limit

DNR ES = NR140 Enforcement Standard

-- = no standard established

Underlined number indicates concentration exceeds the DNR PAL

Bold number indicates concentration exceeds the DNR ES

ug/L = micrograms per liter = parts per billion (ppb)

Table 3 Water Table Elevations, O'Rourke Distributing Company, Incorporated Waukesha, Wisconsin

Well ID	Elevation (ft)		Date	Depth to Water (ft) Below PVC Riser	Elevation of Water Table (ft*)
	Ground Surface	Top of PVC Riser			
MW1	-	99.49 *	06/11/91	11.40	88.09
			09/16/91	10.66	88.83
			10/09/96	10.86	88.63
	96.60**	98.77 **	10/11/91	10.87	87.90
			10/17/91	10.94	87.83
			10/28/91	10.57	88.20
			11/18/91	16.82	81.95
			12/05/91	17.26	81.51
			01/03/92	>17.71	>81.06
			06/01/92	17.38	81.39
			06/02/92	17.38	81.39
			09/15/92	13.70	85.07
			01/10/94	16.11	82.66
			03/03/94	15.08	83.69
			03/11/94	14.32	84.45
			11/03/95	10.72	88.05
	799.55***	801.40 ***	01/15/96	11.49	789.91
			03/29/96	11.56	789.84
			06/12/96	10.54	790.86
			12/23/96	11.35	790.05
			04/17/97	11.48	789.92
			08/07/97	11.19	790.21
			01/16/98	11.30	790.10
			07/22/98	11.27	790.13
			10/29/98	11.28	790.12
			01/20/99	11.45	789.95
			04/22/99	10.80	790.60
			07/13/99	10.93	790.47
			10/12/99	11.15	790.25
			01/06/00	11.44	789.96
MW2	-	99.61 *	09/16/91	10.67	88.94
			10/09/91	10.87	88.74
	96.40**	98.85 **	10/11/91	10.90	87.95
			10/17/91	10.99	87.86
			10/28/91	10.61	88.24
			11/18/91	16.72	82.13
			12/05/91	>17.63	>81.22
			01/03/92	>17.63	>81.22
			06/01/92	>17.63	>81.22
			06/02/92	>17.63	>81.22
			09/15/92	13.80	85.05
			01/10/94	16.10	82.75
			03/03/94	15.08	83.77
			03/11/94	14.32	84.53
			11/03/95	10.80	88.05
	799.38***	801.50 ***	01/15/96	11.58	789.92
			03/29/96	11.62	789.88
			06/12/96	10.64	790.86
			12/23/96	12.00	789.50
			04/17/97	12.14	789.36
			08/07/97	-	-
			01/16/98	11.96	789.54
			07/22/98	11.92	789.58
			10/29/98	12.00	789.50
			01/20/99	12.08	12.08 789.42

Table 3 Water Table Elevations, O'Rourke Distributing Company, Incorporated Waukesha, Wisconsin

Well ID	Elevation (ft)		Date	Depth to Water (ft) Below PVC Riser	Elevation of Water Table (ft*)
	Ground Surface	Top of PVC Riser			
MW3	-	101.09 *	09/16/91	12.12	88.97
	99.00**	100.30 **	10/09/91	12.30	88.79
			10/11/91	12.35	87.95
			10/17/91	12.42	87.88
			10/28/91	12.03	88.27
			11/18/91	17.68	82.62
			12/05/91	>18.29	>83.31
			01/03/92	>18.29	>83.31
			06/01/92	>18.29	>83.31
			06/02/92	>18.29	>83.31
			09/15/92	15.29	85.01
	800.99***	802.95 ***	01/10/94	18.04	82.26
			03/03/94	16.48	83.82
			03/11/94	15.75	84.55
			11/03/95	12.22	88.08
			01/15/96	12.99	789.96
			03/29/96	13.04	789.91
			06/12/96	12.00	790.95
			12/23/96	12.88	790.07
			04/17/97	12.96	789.99
			08/07/97	-	-
			01/16/98	12.80	790.15
			07/22/98	12.76	790.19
			10/29/98	12.78	790.17
			01/20/99	12.98	789.97
MW4	-	100.55 *	06/11/91	12.35	88.20
	97.86**	99.78 **	09/16/91	11.57	88.98
			10/09/91	11.75	88.80
			10/11/91	11.84	87.94
			10/17/91	11.91	87.87
			10/28/91	11.48	88.30
			11/18/91	16.36	83.42
			12/05/91	could not locate	-
			01/03/92	>17.03	>84.67
			06/01/92	>17.03	>84.67
			06/02/92	>17.03	>84.67
	800.74***	802.54 ***	09/15/92	14.73	85.05
			01/10/94	>17.03	>84.67
			03/03/94	15.81	83.97
			03/11/94	15.07	84.71
			11/03/95	11.79	87.99
			01/15/96	12.61	789.93
			03/29/96	12.74	789.80
			06/12/96	11.70	790.84
			12/23/96	12.52	790.02
			04/17/97	12.64	789.90
			08/07/97	12.35	790.19
			01/16/98	12.45	790.09
			07/22/98	12.42	790.12
			10/29/98	12.45	790.09
			01/20/99	12.65	789.89
			04/22/99	12.04	790.50
			07/13/99	12.13	790.41
			10/12/99	12.30	790.24
			01/06/99	12.74	789.80

Table 3 Water Table Elevations, O'Rourke Distributing Company, Incorporated Waukesha, Wisconsin

Well ID	Elevation (ft)		Date	Depth to Water (ft) Below PVC Riser	Elevation of Water Table (ft*)
	Ground Surface	Top of PVC Riser			
MW101	-	102.49	09/16/91	13.74	88.75
	99.65	101.81	10/09/91	13.96	88.53
			10/11/91	13.98	87.83
			10/17/91	14.00	87.81
			10/28/91	13.60	88.21
			11/18/91	>18.00	>83.81
			12/05/91	>18.00	>83.81
			01/03/92	>18.00	>83.81
			06/01/92	17.82	83.99
			06/02/92	17.83	83.98
			09/15/92	16.98	84.83
	802.31	804.43	01/10/94	>18.00	>83.81
			03/03/94	>18.00	>83.81
			03/11/94	17.44	84.37
			11/03/95	13.78	88.03
			01/15/96	14.55	789.88
			03/29/96	14.58	789.85
			06/12/96	13.57	790.86
			12/23/96	14.41	790.02
			04/17/97	14.56	789.87
			08/07/97	14.14	790.29
			01/16/98	14.34	790.09
			07/22/98	14.31	790.12
			10/29/98	14.32	790.11
			01/20/99	14.50	789.93
			04/22/99	13.81	790.62
			07/13/99	13.98	790.45
			10/12/99	14.16	790.27
			01/06/99	14.54	789.89
MW102	-	99.97	09/16/91	11.13	88.84
	99.40	99.23	10/09/91	11.31	88.66
			10/11/91	11.38	87.85
			10/17/91	11.42	87.81
			10/28/91	11.04	88.19
			11/18/91	17.36	81.87
			12/05/91	>18.37	>80.86
			01/03/92	>18.37	>80.86
			06/01/92	>18.37	>80.86
			06/02/92	>18.37	>80.86
			09/15/92	14.21	85.02
	802.11	802.05	01/10/94	-	-
			03/03/94	15.69	83.54
			03/11/94	14.95	84.28
			11/03/95	11.36	87.87
			01/15/96	12.18	789.87
			03/29/96	12.22	789.83
			06/12/96	11.11	790.94
			12/23/96	11.93	790.12
			04/17/97	12.00	790.05
			08/07/97	11.72	790.33
			01/16/98	11.93	790.12
			07/22/98	11.75	790.30
			10/29/98	11.90	790.15
			01/20/99	12.10	789.95
			04/22/99	11.45	790.60
			07/13/99	11.42	790.63
			10/12/99	11.63	790.42
			01/06/99	12.00	790.05

Table 3 Water Table Elevations, O'Rourke Distributing Company, Incorporated Waukesha, Wisconsin

Well ID	Elevation (ft)		Date	Depth to Water (ft) Below PVC Riser	Elevation of Water Table (ft*)
	Ground Surface	Top of PVC Riser			
MW103	-	101.01	09/16/91	12.20	88.81
			10/09/91	12.38	88.63
	97.60	100.31	10/11/91	12.43	87.88
			10/17/91	12.49	87.82
			10/28/91	12.11	88.20
			11/18/91	>16.94	>83.37
			12/05/91	>16.94	>83.37
			01/03/92	>16.94	>83.37
			06/01/92	>16.94	>83.37
			06/02/92	>16.94	>83.37
			09/15/92	15.24	85.07
			01/10/94	>16.94	>83.37
			03/03/94	16.67	83.64
			03/11/94	15.90	84.41
			11/03/95	12.28	88.03
	800.50	802.97	01/15/96	13.09	789.88
			03/29/96	13.13	789.84
			06/12/96	12.14	790.83
			12/23/96	11.97	791.00
			04/17/97	13.11	789.86
			08/07/97	12.81	790.16
			01/16/98	12.89	790.08
			07/22/98	12.87	790.10
			10/29/98	12.94	790.03
			04/22/99	12.48	790.49
			07/13/99	12.54	790.43
			10/12/99	12.73	790.24
			01/06/00	13.11	789.86
MW104	99.92	101.69	09/16/91	13.64	88.05
			10/09/91	13.94	87.75
			10/11/91	13.86	87.83
			10/17/91	13.91	87.78
			10/28/91	13.52	88.17
			11/18/91	>18.49	>83.2
			12/05/91	>18.49	>83.2
			01/03/92	>18.49	>83.2
			06/01/92	>18.49	>83.2
			06/02/92	>18.49	>83.2
			09/15/92	16.69	85.00
			01/10/94	>18.49	>83.2
	100.06	101.73	03/03/94	18.06	83.63
			03/11/94	17.31	84.42
			11/03/95	13.70	88.03
	802.74	804.35	01/15/96	14.44	789.91
			03/29/96	14.48	789.87
			06/12/96	13.49	790.86
			12/23/96	14.34	790.01
			04/17/97	14.45	789.90
			08/07/97	-	-
			01/16/98	14.25	790.10
			07/22/98	14.22	790.13
			10/29/98	14.25	790.10

RESPONSIBLE PARTY SIGNED STATEMENT

Site Name: O'Rourke Distributing Co, Inc.

**Site Address: 303 Sentry Drive
Waukesha, WI 53186**

**Responsible Party: Main Street Holdings, LLC
303 Sentry Drive
Waukesha, WI 53186**

The above named responsible party, certifies that the attached legal description(s) is complete and accurate for all of the property within the contaminated site's boundaries that have soil and/or groundwater contamination that exceeds acceptable levels established by the Wisconsin Department of Natural Resources at the time of this case closure request.

MAIN STREET HOLDINGS, LLC

By: J. A. Fuller

(Signed by Authorized Representative)

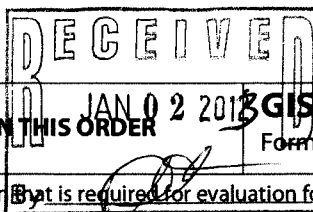
Date: 12-28-2012

LEGAL DESCRIPTION

All that part of the Northwest $\frac{1}{4}$ of Section 10, in Town 6 North, Range 19 East, and the Northeast $\frac{1}{4}$ of Section 9, in Town 6 North, Range 19 East in the City of Waukesha, County of Waukesha, State of Wisconsin, bounded and described as follows:

Commencing at the Southwest corner of River Park Industrial Subdivision, a recorded plat in the City of Waukesha; said point also being the intersection of the North line of a 70 foot right-of-way known as Philip Drive with the East line of a 100 foot right-of-way known as Sentry Drive; thence South $01^{\circ}38'40''$ West along the East line of Sentry Drive 435.90 feet to the intersection of the East line of said Sentry Drive with the South and West line of a 25 foot railroad easement; said point also being the point of beginning; thence continuing South $01^{\circ}38'40''$ West along the East line of said Sentry Drive 200.00 feet; thence South $88^{\circ}21'20''$ East 488.29 feet to a point on the South and West line of the aforementioned railroad easement; thence 268.30 feet along the South and West line of said railroad easement and the arc of a curve with a radius of 397.76 feet, a chord bearing North $59^{\circ}01'56''$ West and a chord length of 263.24 feet; thence North $78^{\circ}21'20''$ West along the South and West line of said railroad easement, 123.80 feet to the start of the curve; thence 146.29 feet along the South and West line of said railroad easement and the arc of a curve with a radius of 422.76 feet, a chord bearing North $68^{\circ}26'33''$ West, and a chord length of 145.56 feet to the point of beginning.

Tax Key No. WAKC 1329.994



This Adobe Fillable form is intended to provide a list of information that is required for evaluation for case closure. It is to be used in conjunction with Form 4400-202, Case Closure Request. The closure of a case means that the Department has determined that no further response is required at that time based on the information that has been submitted to the Department.

NOTICE: Completion of this form is mandatory for applications for case closure pursuant to ch. 292, Wis. Stats. and ch. NR 726, Wis. Adm. Code, including cases closed under ch. NR 746 and ch. NR 726. The Department will not consider, or act upon your application, unless all applicable sections are completed on this form and the closure fee and any other applicable fees, required under ch. NR 749, Wis. Adm. Code, Table 1 are included. It is not the Department's intention to use any personally identifiable information from this form for any purpose other than reviewing closure requests and determining the need for additional response action. The Department may provide this information to requesters as required by Wisconsin's Open Records law [ss. 19.31 - 19.39, Wis. Stats.].

BRRTS #: 03-68-001323 (No Dashes) PARCEL ID #: 268113230
ACTIVITY NAME: O'Rourke Distributing Company, Inc. WTM COORDINATES: X: 662797 Y: 282308

CLOSURE DOCUMENTS (the Department adds these items to the final GIS packet for posting on the Registry)

- ☐ Closure Letter
- ☒ Maintenance Plan (if activity is closed with a land use limitation or condition (land use control) under s. 292.12, Wis. Stats.)
- ☐ Continuing Obligation Cover Letter (for property owners affected by residual contamination and/or continuing obligations)
- ☒ Conditional Closure Letter
- ☐ Certificate of Completion (COC) (for VPLE sites)

SOURCE LEGAL DOCUMENTS

- ☒ **Deed:** The most recent deed as well as legal descriptions, for the **Source Property** (where the contamination originated). Deeds for other, off-source (off-site) properties are located in the **Notification** section.

Note: If a property has been purchased with a land contract and the purchaser has not yet received a deed, a copy of the land contract which includes the legal description shall be submitted instead of the most recent deed. If the property has been inherited, written documentation of the property transfer should be submitted along with the most recent deed.

- ☒ **Certified Survey Map:** A copy of the certified survey map or the relevant section of the recorded plat map for those properties where the legal description in the most recent deed refers to a certified survey map or a recorded plat map. (lots on subdivided or platted property (e.g. lot 2 of xyz subdivision)).

Figure #: Title:

- ☒ **Signed Statement:** A statement signed by the Responsible Party (RP), which states that he or she believes that the attached legal description accurately describes the correct contaminated property.

MAPS (meeting the visual aid requirements of s. NR 716.15(2)(h))

Maps must be no larger than 11 x 17 inches unless the map is submitted electronically.

- ☒ **Location Map:** A map outlining all properties within the contaminated site boundaries on a U.S.G.S. topographic map or plat map in sufficient detail to permit easy location of all parcels. If groundwater standards are exceeded, include the location of all potable wells within 1200 feet of the site.

Note: Due to security reasons municipal wells are not identified on GIS Packet maps. However, the locations of these municipal wells must be identified on Case Closure Request maps.

Figure #: 1 Title: Site Location Map

- ☒ **Detailed Site Map:** A map that shows all relevant features (buildings, roads, individual property boundaries, contaminant sources, utility lines, monitoring wells and potable wells) within the contaminated area. This map is to show the location of all contaminated public streets, and highway and railroad rights-of-way in relation to the source property and in relation to the boundaries of groundwater contamination exceeding a ch. NR 140 Enforcement Standard (ES), and/or in relation to the boundaries of soil contamination exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Levels (SSRCL) as determined under s. NR 720.09, 720.11 and 720.19.

Figure #: 2 Title: Soil Boring and Monitoring Well Location Diagram

- ☒ **Soil Contamination Contour Map:** For sites closing with residual soil contamination, this map is to show the location of all contaminated soil and a single contour showing the horizontal extent of each area of contiguous residual soil contamination that exceeds a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL) as determined under s. NR 720.09, 720.11 and 720.19.

Figure #: 3 Title: Approximate Extents of Petroleum and Solvent Affected Soils

BRRS #: 03-68-001323

ACTIVITY NAME: O'Rourke Distributing Company, Inc.

MAPS (continued)

- ☒ **Geologic Cross-Section Map:** A map showing the source location and vertical extent of residual soil contamination exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL). If groundwater contamination exceeds a ch. NR 140 Enforcement Standard (ES) when closure is requested, show the source location and vertical extent, water table and piezometric elevations, and locations and elevations of geologic units, bedrock and confining units, if any.

Figure #: 3 Title: Geologic Cross Section A-A' (Northern Environmental)

Figure #: Title:

- ☒ **Groundwater Isoconcentration Map:** For sites closing with residual groundwater contamination, this map shows the horizontal extent of all groundwater contamination exceeding a ch. NR140 Preventive Action Limit (PAL) and an Enforcement Standard (ES). Indicate the direction and date of groundwater flow, based on the most recent sampling data.

Note: This is intended to show the total area of contaminated groundwater.

Figure #: 4 Title: Approximate Extents of Petroleum and Solvent Affected Groundwater

- ☒ **Groundwater Flow Direction Map:** A map that represents groundwater movement at the site. If the flow direction varies by more than 20° over the history of the site, submit 2 groundwater flow maps showing the maximum variation in flow direction.

Figure #: 6 Title: Groundwater Elevation Contour Diagram

Figure #: Title:

TABLES (meeting the requirements of s. NR 716.15(2)(h)(3))

Tables must be no larger than 11 x 17 inches unless the table is submitted electronically. Tables must not contain shading and/or cross-hatching. The use of **BOLD** or *ITALICS* is acceptable.

- ☒ **Soil Analytical Table:** A table showing remaining soil contamination with analytical results and collection dates.

Note: This is one table of results for the contaminants of concern. Contaminants of concern are those that were found during the site investigation, that remain after remediation. It may be necessary to create a new table to meet this requirement.

Table #: 1 Title: Summary of Soil Sample Analytical Results

- ☒ **Groundwater Analytical Table:** Table(s) that show the most recent analytical results and collection dates, for all monitoring wells and any potable wells for which samples have been collected.

Table #: 2 Title: Summary of Groundwater Analytical Results

- ☒ **Water Level Elevations:** Table(s) that show the previous four (at minimum) water level elevation measurements/dates from all monitoring wells. If present, free product is to be noted on the table.

Table #: 3 Title: Groundwater Level Elevations

IMPROPERLY ABANDONED MONITORING WELLS

For each monitoring well not properly abandoned according to requirements of s. NR 141.25 include the following documents.

Note: If the site is being listed on the GIS Registry for only an improperly abandoned monitoring well you will only need to submit the documents in this section for the GIS Registry Packet.

- ☒ **Not Applicable**

- ☐ **Site Location Map:** A map showing all surveyed monitoring wells with specific identification of the monitoring wells which have not been properly abandoned.

Note: If the applicable monitoring wells are distinctly identified on the Detailed Site Map this Site Location Map is not needed.

Figure #: Title:

- ☐ **Well Construction Report:** Form 4440-113A for the applicable monitoring wells.

- ☐ **Deed:** The most recent deed as well as legal descriptions for each property where a monitoring well was not properly abandoned.

- ☐ **Notification Letter:** Copy of the notification letter to the affected property owner(s).

BRRTS #: 03-68-001323

ACTIVITY NAME: O'Rourke Distributing Company, Inc.

NOTIFICATIONS

Source Property

☒ **Not Applicable**

☐ **Letter To Current Source Property Owner:** If the source property is owned by someone other than the person who is applying for case closure, include a copy of the letter notifying the current owner of the source property that case closure has been requested.

☐ **Return Receipt/Signature Confirmation:** Written proof of date on which confirmation was received for notifying current source property owner.

Off-Source Property

Group the following information per individual property and label each group according to alphabetic listing on the "Impacted Off-Source Property" attachment.

☒ **Not Applicable**

☐ **Letter To "Off-Source" Property Owners:** Copies of all letters sent by the Responsible Party (RP) to owners of properties with groundwater exceeding an Enforcement Standard (ES), and to owners of properties that will be affected by a land use control under s. 292.12, Wis. Stats.

Note: Letters sent to off-source properties regarding residual contamination must contain standard provisions in Appendix A of ch. NR 726.

Number of "Off-Source" Letters:

☐ **Return Receipt/Signature Confirmation:** Written proof of date on which confirmation was received for notifying any off-source property owner.

☐ **Deed of "Off-Source" Property:** The most recent deed(s) as well as legal descriptions, for all affected deeded **off-source** property(ies). This does not apply to right-of-ways.

Note: If a property has been purchased with a land contract and the purchaser has not yet received a deed, a copy of the land contract which includes the legal description shall be submitted instead of the most recent deed. If the property has been inherited, written documentation of the property transfer should be submitted along with the most recent deed.

☐ **Certified Survey Map:** A copy of the certified survey map or the relevant section of the recorded plat map for those properties where the legal description in the most recent deed refers to a certified survey map or a recorded plat map. (lots on subdivided or platted property (e.g. lot 2 of xyz subdivision)).

Figure #:

Title:

☐ **Letter To "Governmental Unit/Right-Of-Way" Owners:** Copies of all letters sent by the Responsible Party (RP) to a city, village, municipality, state agency or any other entity responsible for maintenance of a public street, highway, or railroad right-of-way, within or partially within the contaminated area, for contamination exceeding a groundwater Enforcement Standard (ES) and/or soil exceeding a Residual Contaminant Level (RCL) or a Site Specific Residual Contaminant Level (SSRCL).

Number of "Governmental Unit/Right-Of-Way Owner" Letters:

State Bar of Wisconsin Form 1-2003
WARRANTY DEED

Document Number

Document Name

THIS DEED, made between Prairieville, LLC

("Grantor," whether one or more), and Main Street Holdings, LLC

("Grantee," whether one or more).

Grantor for a valuable consideration, conveys to Grantee the following described real estate, together with the rents, profits, fixtures and other appurtenant interests, in Waukesha County, State of Wisconsin ("Property") (if more space is needed, please attach addendum):

See attached legal description

3724775

REGISTER OF DEEDS
WAUKESHA COUNTY, WI
RECORDED ON

February 08, 2010 09:24 AM
James R Behrend
Register of Deeds

2 PGS
TOTAL FEE: \$13.00
TRANS FEE: \$0.00
Book Page -



Recording Area

Name and Return Address

Attorney John M. Remmers
Cramer, Multhauf & Hammes, LLP
P.O. Box 558
Waukesha, WI 53187

FEE
77.25(6)
EXEMPT

WAKC 1329.994

Parcel Identification Number (PIN)

This is not homestead property.
(is) (is not)

Grantor warrants that the title to the Property is good, indefeasible, in fee simple and free and clear of encumbrances except: municipal and zoning ordinances and agreements entered under them, recorded easements for the distribution of utility and municipal services, recorded building and use restrictions and covenants, and general taxes levied in the year of transfer.

Dated February 1, 2010

Prairieville, LLC

(SEAL)

Judith A. Fuller
* By: Judith A. Fuller, Manager

(SEAL)

(SEAL)

(SEAL)

AUTHENTICATION

Signature(s) _____

authenticated on _____

TITLE: MEMBER STATE BAR OF WISCONSIN
(If not, _____
authorized by Wis. Stat. § 706.06)

THIS INSTRUMENT DRAFTED BY:

Attorney John M. Remmers

Cramer, Multhauf & Hammes, LLP

ACKNOWLEDGMENT

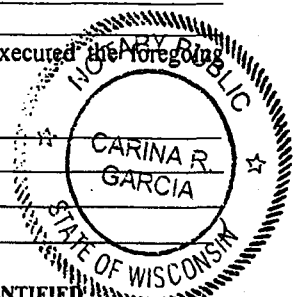
STATE OF WISCONSIN)
) ss.
WAUKESHA COUNTY)

Personally came before me on February 1, 2010,
the above-named Judith A. Fuller

to me known to be the person(s) who executed the foregoing
instrument and acknowledged the same.

* Carina R. Garcia
Notary Public, State of WISCONSIN

My commission (is permanent) (exp) _____



(Signatures may be authenticated or acknowledged. Both are not necessary.)

NOTE: THIS IS A STANDARD FORM. ANY MODIFICATION TO THIS FORM SHOULD BE CLEARLY IDENTIFIED.

WARRANTY DEED

©2003 STATE BAR OF WISCONSIN

FORM NO. 1-2003

*Type name below signatures.


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LEGAL DESCRIPTION

All that part of the Northwest ¼ of Section 10, in Town 6 North, Range 19 East, and the Northeast ¼ of Section 9, in Town 6 North, Range 19 East in the City of Waukesha, County of Waukesha, State of Wisconsin, bounded and described as follows:

Commencing at the Southwest corner of River Park Industrial Subdivision, a recorded plat in the City of Waukesha, said point also being the intersection of the North line of a 70 foot right-of-way known as Philip Drive with the East line of a 100 foot right-of-way known as Sentry Drive; thence South 01°38'40" West along the East line of Sentry Drive 435.90 feet to the intersection of the East line of said Sentry Drive with the South and West line of a 25 foot railroad easement; said point also being the point of beginning; thence continuing South 01°38'40" West along the East line of said Sentry Drive 200.00 feet; thence South 88°21'20" East 488.29 feet to a point on the South and West line of the aforementioned railroad easement; thence 268.30 feet along the South and West line of said railroad easement and the arc of a curve with a radius of 397.76 feet, a chord bearing North 59°01'56" West and a chord length of 263.24 feet; thence North 78°21'20" West along the South and West line of said railroad easement, 123.80 feet to the start of the curve; thence 146.29 feet along the South and West line of said railroad easement and the arc of a curve with a radius of 422.76 feet, a chord bearing North 68°26'33" West, and a chord length of 145.56 feet to the point of beginning.

Tax Key No. WAKC 1329.994

Pay Options	Tax Bill	Tax Listing	Search	
				12/27/2012 3:37:18 PM
Tax Key: <input type="checkbox"/> WAKC1329994 <input type="checkbox"/>				WAUKESHA COUNTY
Tax Year: <input type="checkbox"/> 2012 <input type="checkbox"/>				CITY OF WAUKESHA
OWNER NAME AND MAILING ADDRESS		PROPERTY ADDRESS		
MAIN STREET HOLDINGS LLC		303 SENTRY DR		
P O BOX 709				
WAUKESHA, WI 53187-0709				
LEGAL DESCRIPTION				
PT NE1/4 SEC 9 T6N R19E COME LI SENTRY DR 435.9' S1 38'40 W OF SW COR RIV PK INDSUB, S1 38'40 W200', S88 21'20 E 488.29', NW ON ARC 268.3', N78 21'20 W 123.8', NW ON ARC 146.29' TO BG DOCNO 3724775				
PROPERTY DESCRIPTION				
Assessment Year:	2012	Active for Assessment Year:	YES	
First Roll Year:		Retired Roll Year:		
Assessed with Others:	NO	Referral:	NO	
Burial Site:	NO			
ASSESSMENT INFORMATION				
Assessed By:	LOCAL	Assessment Type:	FULL	
Approved Value Year:	2012	Board of Review Date:	5/18/2012	
Assessment Ratio:	102.96%	Assessment Ratio Year:	2012	
PROPERTY VALUES				
Property Class	Acres	Land	Improvement	Total
COMMERCIAL, MERCANTILE	1.360	\$118,300.00	\$276,100.00	\$394,400.00
Total:	1.360	\$118,300.00	\$276,100.00	\$394,400.00
DISTRICTS				
District Type	District Name			DOR Code
CITY	CITY OF WAUKESHA			291
SCHOOL	WAUKESHA SCHOOL 6174			6174
TCDB	WAUKESHA TECH COLLEGE			08
<p>For all GIS related issues, please contact Waukesha County Land Information Systems at landinformation@waukeshacounty.gov.</p> <p>This program accesses data from databases maintained by several County Departments and Local Municipalities. There may be inconsistency in data depending on the date the information was gathered or the purpose for which it is maintained. Due to variances in sources and update cycles, there is no guarantee as to the accuracy of the data. For questions regarding Tax Listing or Tax Bill information, please contact the Real Property Tax Listing Division at (262)548-7597 or taxlisting@waukeshacounty.gov. For questions regarding Outstanding Taxes and Tax Payment records, contact the County Treasurer's office at (262)548-7029.</p> <p>12/27/2012 3:37:18 PM</p>				

Wisconsin Department of Natural Resources

Environmental Cleanup & Brownfields Redevelopment

BRRTS on the Web

Click the Location Name below to view the Location Details page for this Activity. Other Activities, if present, may be viewed from that page.

Basic Search >> 03-68-558431 Activity Details

03-68-558431 O' ROURKE DISTRIBUTING (FMR)						
OPEN LUST						
Location Name (Click Location Name to View Location Details)				County	WDNR Region	
303 SENTRY				WAUKESHA	SOUTHEAST	
Address				Municipality		
303 SENTRY DR				WAUKESHA		
Public Land Survey System			Latitude	Google Maps	RR Sites Map	
NE 1/4 of the NE 1/4 of Sec 09, T06N, R19E			43.0000335	CLICK TO VIEW	CLICK TO VIEW	
Additional Location Description			Longitude	Facility ID	Size (Acres)	
			-88.2480588	268113230	UNKNOWN	
Jurisdiction	PECFA No.	EPA Cerclis ID	Start Date	End Date	Last Action	
DNR RR			2012-02-29		2017-04-12	
Characteristics						
PECFA Tracked?	EPA NPL Site?	Eligible for PECFA Funds?	Above Ground Storage Tank?	Drycleaner?	Co-Contamination?	On GIS Registry?
No	No	No	No	No	No	No
Actions						
Place Cursor Over Action Code to View Description						
Date	Code	Name	Comment			
2012-02-29	1	Notification				
2012-03-06	2	RP Letter Sent				
2013-07-22	50	GIS Registry Site	*** AUTO POPULATED BY 710 ACTION ENTRY ***			
2013-07-22	710	Database Fee Paid for Soil	REC'D CK# 3941 \$200.00			
2013-07-24	179	Closure Review Request Received (no fee required)	CLOSURE FEE PAID INCLUDED WITH BRRTS# 03-68-001323			
2013-08-21	80	Closure Not Approved	CLOSURE DENIAL - NO CLOSURE			
2015-08-27	99	Miscellaneous	REC'D HIRED ENVIRONMENTAL CONSULTANT LTR, ALSO FOR BRRTS #03-68-001323			
2016-07-22	195	Semi-Annual/PECFA Cost Reporting Requirement Met	Period: 1/1/2016 - 6/30/2016			
Click 195 Action Name above to view the NR700 report						
2017-01-10	195	Semi-Annual/PECFA Cost Reporting Requirement Met	Period: 7/1/2016 - 12/31/2016			
Click 195 Action Name above to view the NR700 report						
2017-04-12	147	Remedial Action Design Report Received (w/out Fee)	FEE PAID UNDER SI SEE ALSO BRRTS #03-68-001323			
2017-04-12	137	Site Investigation Report Received with Fee	REC'D CK #8070 \$1050.00			
Impacts						
Type			Comment			
Soil Contamination			-			
Substances						
Substance		Type		Amount Released	Units	
Gasoline - Unleaded and Leaded		Petroleum				

Who	
Role	Name/Address
Project Manager	JAMES DELWICHE 141 NW BARSTOW RD WAUKESHA, WI 53188
Responsible Party	WAUKESHA STATE BANK 151 E ST PAUL AVE WAUKESHA, WI 53186

BRRTS data comes from various sources, both internal and external to DNR. There may be omissions and errors in the data and delays in updating new information. Please see the [disclaimers page](#) for more information. We welcome your [Feedback](#).

The Official Internet site for the Wisconsin Department of Natural Resources
101 S. Webster Street . PO Box 7921 . Madison, Wisconsin 53707-7921 . 608.266.2621

Release 2.5.6 | 04/19/2017 | [Release Notes](#)

Wisconsin Department of Natural Resources

Environmental Cleanup & Brownfields Redevelopment

BRRTS on the Web

Click the Location Name below to view the Location Details page for this Activity. Other Activities, if present, may be viewed from that page.

Basic Search >> 07-68-530140 Activity Details

07-68-530140 O' ROURKE DISTRIBUTING						
GENERAL PROP						
Location Name (Click Location Name to View Location Details)				County	WDNR Region	
303 SENTRY				WAUKESHA	SOUTHEAST	
Address				Municipality		
303 SENTRY DR				WAUKESHA		
Public Land Survey System			Latitude	Google Maps	RR Sites Map	
NE 1/4 of the NE 1/4 of Sec 09, T06N, R19E			43.0000121	CLICK TO VIEW	CLICK TO VIEW	
Additional Location Description			Longitude	Facility ID	Size (Acres)	
			-88.2480256	268113230	UNKNOWN	
Jurisdiction	PECFA No.	EPA Cerclis ID	Start Date	End Date	Last Action	
DNR RR					2015-08-17	
Characteristics						
PECFA Tracked?	EPA NPL Site?	Eligible for PECFA Funds?	Above Ground Storage Tank?	Drycleaner?	Co-Contamination?	On GIS Registry?
No	No	No	No	No	No	No
Actions						
Place Cursor Over Action Code to View Description						
Date	Code	Name	Comment			
2004-08-05	686	Lender Phase 1 & 2 Assessment Review Request with Fee	REC'D CK# 39086 \$500.00			
2004-10-04	688	Lender Phase 1 & 2 Assessment Review	BB.			
2014-08-07	695	Lender Environmental Assessment Received (w/out Fee)				
2014-08-11	99	Miscellaneous	ACKNOWLEDGMENT LTR SENT			
2015-07-09	686	Lender Phase 1 & 2 Assessment Review Request with Fee	REC'D CK #93986 \$700.00			
2015-08-17	688	Lender Phase 1 & 2 Assessment Review	LENDER LIABILITY ASSESSMENT LETTER SENT			
Linked to Code 688: 0768530140 Lender Liability.pdf Click to Download or Open						
Who						
Role		Name/Address				

For Additional Information, Please Contact
CHUE YEE YANG 414-263-8366 chueyee.yang@wisconsin.gov

BRRTS data comes from various sources, both internal and external to DNR. There may be omissions and errors in the data and delays in updating new information. Please see the [disclaimers page](#) for more information. We welcome your [Feedback](#).

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101 S. Webster Street . PO Box 7921 . Madison, Wisconsin 53707-7921 . 608.266.2621

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August 17, 2015

BRRTS #: 07-68-530140

Trevor Arnold
Waukesha State Bank
151 E. St. Paul Ave.
P.O. Box 648
Waukesha, WI 53187-0648

Subject: Lender Liability Clarification and Current Environmental Conditions for the 303 Sentry Drive Property, located at 303 Sentry Drive, Waukesha, WI 53186
Tax Parcel #: WAKC1329.994

Dear Mr. Arnold:

On July 9, 2015, the Wisconsin Department of Natural Resources ("the Department") received a request, along with the required \$700 fee, for a lender liability clarification letter. The purpose of this letter is to provide Waukesha State Bank with the requested clarification of environmental liabilities associated with the 303 Sentry Drive property ("the Property"), located at 303 Sentry Drive, Waukesha, in Waukesha County, which the financial institution acquired on May 7, 2015, through an order confirming sheriff's sale to secure payment of indebtedness. Please refer to the attached Figure 1 for a map of the Property.

Request

The application cover letter dated July 7, 2015 requested a determination from the Department on whether Waukesha State Bank is eligible for the lender liability exemption under s. 292.21, Wisconsin Statutes (Wis. Stats.), for the Property that Waukesha State Bank has acquired title to through enforcement of a security interest.

The following documents were also submitted with the request:

- Lender Liability Exemption Environmental Assessment Tracking Form, dated August 6, 2014;
- Phase I Environmental Site Assessment (ESA) Report, prepared by Key Engineering Group, Ltd. (KEY), dated July 30, 2014;
- Phase II ESA Report, prepared by KEY, dated June 4, 2015;
- Phase I ESA Update Letter, prepared by KEY, dated July 1, 2015;
- Copy of recorded Sheriff's Deed to Waukesha State Bank;
- Court Order Confirming Sheriff's Sale, Signed by Judge on May 7, 2015;
- Legal Description of the Property;

- Map of the Property; and
- Aerial Photograph of the Property.

Summary of Environmental Conditions

- Waukesha State Bank acquired the Property through the mortgage foreclosure process on May 7, 2015. A Court Order Confirming the Sheriff's Sale was signed by the judge on that date. The Property is an irregular shaped, 1.36 acre parcel located in an area of Waukesha zoned as manufacturing.
- Two buildings occupy the Property. The building on the west portion of the Property is a 5,740 square-foot, single-story, metal framed, slab-on-grade building. The south portion of this building is used by Pinnacle Realty and Mainstreet Holdings, LLC as office and storage space. The north portion of the building is leased to DH Graphics and Signs, a manufacturer of automotive graphics and signs. The building in the central portion of the Property is a 3,225 square-foot, single-story, wood famed, slab-on-grade building. This building is currently used to store construction supplies and equipment, and to service construction equipment. The two buildings were formerly used by Cities Service Oil Company and O'Rourke Distributing Company for bulk petroleum distributing operations, vehicle fueling and vehicle maintenance from approximately 1968 to 2003. A member of the O'Rourke family purchased the Property after the oil distributing operations ceased and used the west building for automobile repair and body work. The west building was subsequently used by Primevil Customs for vehicle maintenance and repair.
- The Phase I ESA Update did not report any changes in site conditions since the Phase I ESA conducted by KEY in August 2014. Construction equipment, building materials, tires, and miscellaneous discarded construction equipment were reported on the Property and adjacent to the buildings. Five, labeled and sealed 55-gallon drums of monitoring well purge water were observed on the south side of the storage building located in the center of the Property. No stains were observed on soil surrounding the drums. KEY moved the drums to the inside of the storage building for temporary storage. Two 55-gallon drums containing waste oil and coolant were observed in the northeast corner inside the storage building. The drums were reported to be intact and oil staining was observed on the concrete floor in the area of the drums. The analytical results for these drums are in the site investigation report in the Department's file and KEY stated the drums are scheduled for removal from the Property for proper disposal. A solvent sink used to clean vehicle parts was observed along the east wall of the storage building during the Phase I ESA conducted in August 2014. Mineral spirits were reported to be used to clean parts in the sink and waste liquids were disposed in 55-gallon drums. The drums were periodically collected by Safety Clean for proper disposal. The Phase I ESA Update Letter did not describe the presence of the solvent sink. One-gallon cans of paint were stored throughout the storage building. The cans were sealed and intact and no staining was observed around the cans. The continued proper storage, management, and disposal of the paint containers are the responsibility of Waukesha State Bank.
- Two open cases are listed on the Department's Bureau for Remediation and Redevelopment Tracking System (BRRS) database (BRRS #: 03-68-001323 and BRRS #: 03-68-558431) for the Property. The BRRS cases are associated with releases of product stored in twenty-two former registered underground storage tanks (USTs) and aboveground storage tanks (ASTs), and vehicle maintenance and repair work. Soil and groundwater at the Property is

contaminated with petroleum-related compounds and chlorinated solvents in concentrations greater than regulatory levels. Soil and groundwater contamination is present across the central portion of the Property. The groundwater contamination extends offsite to the adjacent property to the south. A groundwater extraction and treatment system operated at the Property from 1997 to 1998. The deactivated groundwater treatment system remains in a shed adjacent to the southeast corner of the building located in the west portion of the Property. All of the registered USTs and ASTs have been removed from the Property and KEY did not report any evidence of the former UST and AST systems during the site inspections. KEY reported groundwater monitoring wells and sumps remain at the Property.

- The Property and surrounding land was used for agriculture from at least 1941 to approximately the mid- to late-1960's. Current surrounding land use consists of the following: an abandoned railroad line followed by Miro Tool & Manufacturing to the north; an abandoned railroad line followed by athletic fields to the east; Airgas Merchants Gases, LLC to the south; and Sentry Drive to the west followed by the City of Waukesha's public works and wastewater treatment facilities.

Recognized Environmental Conditions

In accordance with s. 292.21, Wis. Stats., the following recognized environmental condition (REC) was identified in the Phase I ESA dated July 30, 2014.

- The Property was formerly used as a bulk fuel storage and distributing facility. Numerous ASTs and USTs stored leaded and unleaded gasoline, diesel fuel, and fuel oil. Two open cases listed in the Department's BRRTS database are associated with releases from the USTs and ASTs to soil and groundwater. Site investigation results show groundwater contamination extends offsite to the adjacent property to the south. Chlorinated solvents are comingled with the petroleum related compounds in the soil and groundwater.
- While not identified as a REC in the report, the Phase I noted five sealed 55-gallon drums of monitoring well purge water and two 55-gallon drums containing waste oil and coolant. The consultant has scheduled removal and disposal of these drums.

Sampling Conducted

A Phase II ESA was conducted on the Property between August 2014 and December 2014 to investigate the REC identified by the Phase I ESA completed in August 2014. Eight soil borings (SP-1 through SP-8) were drilled to a depth of 15 feet and two soil samples were collected from each boring from depth intervals of 0-4 feet and 8-10 feet or 12-14 feet. Soil samples were analyzed for volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs). Groundwater samples were collected from six monitoring wells at the Property. Three of the wells were existing monitoring wells [MW101 (KMW-1), MW103 (KMW-3) and MW105 (KMW-5)] and three wells were installed by KEY (KMW-2, KMW-4 and KMW-6). Groundwater samples were analyzed for VOCs and PAHs. Two sub-slab vapor samples (AS-1 and AS-2) were collected from beneath the floor of the building located in the west portion of the Property. The vapor samples were analyzed for VOCs.

No VOCs or PAHs were detected in the soil samples at concentrations greater than regulatory levels. Several PAHs [benzo(a)pyrene, benzo(b)fluoranthene, and chrysene] were detected in the groundwater samples collected from monitoring wells KMW-2 and KMW-5 at concentrations greater than the groundwater quality enforcement standard. Benzo(a)pyrene, benzo(b)fluoranthene, and

chrysene were detected in the groundwater samples collected from monitoring wells KMW-1 and KMW-5 at concentrations greater than the groundwater quality preventive action limit (PAL). Benzene was detected in the groundwater samples collected from monitoring wells KMW-2 and KMW-4 at concentrations greater than the PAL and tetrachloroethene was detected in the groundwater sample collected from monitoring well KMW-5 at a concentration greater than the PAL. VOCs were detected in the sub-slab vapor samples at concentrations less than regulatory risk screening levels. Based on the groundwater sampling results, KEY recommended reporting a release to the Department.

KEY's Phase II ESA soil and groundwater sampling was conducted within the area of soil and groundwater contamination previously defined by site investigation work associated with BRRTS cases #: 03-68-001323 and #: 03-68-558431. The groundwater VOC and PAH contaminants and concentrations are similar those detected by the previous site investigation work and do not demonstrate a new release distinguishable from previously reported and investigated releases at the Property. Waukesha State Bank is not required to notify the Department of a discharge of a hazardous substance.

Exemption Conditions

Under Wisconsin's Hazardous Substance Spill Law (the "Spill Law"), s. 292.11, Wis. Stats., a person who "possesses, controls or causes" a hazardous substance discharge is liable for taking necessary investigation and cleanup actions at the Property. Section 292.21, Wis. Stats., provides a liability exemption for lenders. A lender is not subject to ss. 292.11(3), (4) or (7)(b) or (c), Wis. Stats., and is not liable under Chapters 281, 285, 289, 291, or 293 to 299, Wis. Stats., for a discharge of a hazardous substance that occurred on the Property, before the lender takes title, possession or control of the Property through enforcement of a security interest in the Property. Section 292.55(1)(d)1., Wis. Stats., authorizes the Department to issue letters concerning potential liability for environmental pollution.

The lender must meet all of the conditions in s. 292.21, Wis. Stats., to qualify for the lender liability exemption, including but not limited to the following provisions:

- The lender does not intentionally or negligently cause a new discharge of a hazardous substance or exacerbate an existing discharge.
- The lender notifies the Department of any known discharge of a hazardous substance.
- The lender conducts an environmental assessment of the Property not more than 90 days after the date the lender acquires title to, or possession or control of, the Property and files a complete copy of the environmental assessment with the Department not more than 180 days after the date the lender acquires title to, or possession or control of, the Property. The requirements for conducting an environmental assessment are found in s. 292.21(1)(c)2., Wis. Stats.
- If a discharge of a hazardous substance occurs on or after the date on which the lender acquires title to, or possession or control of, the Property, the lender implements an emergency action under s. NR 708.05, Wis. Adm. Code, in response to the discharge of the hazardous substance.
- For a hazardous substance released on or after the date on which the lender acquires title to, or possession or control of, the Property, the lender does not engage in the operation of a

business at the Property, complete work in progress or take other actions associated with conducting the conclusion of the borrower's business (s. 292.21(1)(c)1., Wis. Stats.).

- The lender agrees to allow the Department and any party that possessed or controlled or caused the hazardous substance discharge, and their consultants or contractors, to enter the real Property to take action to respond to the discharge.
- The lender agrees to avoid any interference with action undertaken to respond to the discharge and to avoid actions that worsen the discharge.
- The lender agrees to any other condition that the Department determines is reasonable and necessary to ensure that the Department or another person can adequately respond to the discharge.

Lender Liability Determinations

The Department has reviewed the materials submitted with Waukesha State Bank's request. The Department believes that Waukesha State Bank does meet the conditions of an exempt lender in s. 292.21, Wis. Stats., by taking title by a Court Order Confirming Sheriff's Sale, signed by the judge on May 7, 2015. In addition, the Department will exercise enforcement discretion under Wisconsin's Hazardous Waste Management Laws, regarding the provisions of ch. 291, Wis. Stats., and rules promulgated under that chapter.

The Department makes the following, site-specific liability determinations on the date of this letter:

1. Waukesha State Bank is not required to notify the Department of a release at the Property.
2. Waukesha State Bank acquired the Property through enforcement of a security interest in the Property, and has conducted the required environmental assessment not more than 90 days after taking title.
3. Waukesha State Bank provided a copy of the environmental assessment report to the Department not more than 180 days after acquiring title, which shows that there has been no new discharge of a hazardous substance at the Property.
4. Waukesha State Bank has not intentionally or negligently caused a new hazardous substance discharge at the Property.
5. Waukesha State Bank has met the requirements for an environmental assessment under s. 292.21(1)(c)1.d. and (1)(c)2.a. through i, Wis. Stats., including the requirement that an environmental assessment be conducted not more than 90 days after the date of acquisition of the Property. This environmental assessment report was completed on July 1, 2015 and the Property was acquired, possessed or controlled on May 7, 2015.
6. If Waukesha State Bank continues to meet all of the conditions for liability exemption eligibility that are listed in s. 292.21, Wis. Stats., Waukesha State Bank will not be held responsible under Wisconsin's Hazardous Substance Spill Law, s. 292.11, Wis. Stats., for hazardous substance discharges which were present on the Property prior to Waukesha State Bank acquiring title to, or possession and control of, the Property. If contamination is later discovered that was not revealed by the environmental assessment, Waukesha State Bank

will not be subject to ss. 292.11(3), (4), or (7)(b) or (c), Wis. Stats., and will not be liable under chs. 281, 285, 289, 291, or 293 to 299, Wis. Stats., for a discharge of a hazardous substance on the Property as long as Waukesha State Bank continues to comply with the requirements of s. 292.21(1)(c), Wis. Stats., and does not cause a new hazardous substance discharge or exacerbate an existing discharge on the Property.

The Department will not hold Waukesha State Bank liable for the investigation or cleanup of the Property under either the state's Spill Law or Hazardous Waste Laws, if the following requirements are satisfied:

- Waukesha State Bank's method of acquiring title to, or possession, or control of real property is through the enforcement of a security interest;
- Waukesha State Bank properly manages any containerized hazardous waste materials in accordance with ch. NR 600, Wis. Adm. Code;
- The discharge of a hazardous substance was not caused by an action taken by Waukesha State Bank, or by a failure of Waukesha State Bank to act;
- Waukesha State Bank agrees that any material or environmental media generated at the Property (e.g., contaminated soil generated as part of trenching for utilities) will be managed in accordance with applicable federal and state laws;
- Waukesha State Bank complies with any continuing obligations and/or environmental monitoring and maintenance requirements associated with the Property; and
- Waukesha State Bank understands that a lender liability exemption, and the hazardous waste enforcement discretion decision by the Department, will continue throughout Waukesha State Bank's ownership of the Property and beyond, but is not transferable from Waukesha State Bank to future owners.

Please note that this letter does not exempt any existing underground storage tanks on the Property from compliance with federal and state requirements, including ch. ATCP 93, Wis. Adm. Code. If you have questions regarding these requirements, you should contact the Weights and Measures program at the Department of Agriculture Trade and Consumer Protection at (608) 224-4942 or by email to datcpweightsandmeasures@wi.gov. The program website can be found at [http://datcp.wi.gov/consumer/weights_and_measures/Storage Tank Regulations/](http://datcp.wi.gov/consumer/weights_and_measures/Storage_Tank_Regulations/).

This response letter relates only to the state's lender liability clarification and exemption and makes no determination for other persons concerning the presence or absence of hazardous substances other than those identified in the reports provided.

To determine what specific actions would satisfy the federal lender liability requirements under CERCLA, we advise that you contact either Thomas Krueger at (312) 886-0562 or by email to Krueger.Thomas@epamail.epa.gov, or John Tielsch at (312) 353-7447 or by email to Tielsch.John@epamail.epa.gov. Their mailing address is U.S. EPA REGION 5, Office of Regional Counsel (C-14J), 77 W. Jackson Blvd., Chicago, IL 60604-3590. The U.S. EPA can provide you with guidance on whether your current and proposed actions concerning the Property are consistent with the federal CERCLA lender liability requirements.

The Department tracks information on contaminated properties in a database that is available on the Internet at dnr.wi.gov/topic/Brownfields/clean.html. The Bureau for Remediation and Redevelopment Tracking System (BRRTS) identification number for this activity is included at the top of this letter. Click on "BRRTS on the Web" to access information about this activity. If you have any questions about this letter, please contact Greg Moll at the Department's Waukesha Service Center directly at (262) 574-2165, or email gregory.moll@wisconsin.gov.

Sincerely,



Pamela A. Mylotta -Team Supervisor
Southeast Region, Remediation and Redevelopment Program

Attachment: Figure 1, Site Map

cc: John R. Schreiber; O'Neil, Cannon, Hollman, DeJong & Lang, S.C.
Barry Ashenfelter; DNR CO-RR/5
Margaret Brunette; DNR SER LRT
SER File



LAND INFORMATION SYSTEMS DIVISION

Waukesha County GIS Map



Legend

Plats

- Assessor Plat
- CSM
- Condo Plat
- Subdivision Plat

0 79.97 Feet

The information and depictions herein are for informational purposes and Waukesha County specifically disclaims accuracy in this reproduction and specifically admonishes and advises that if specific and precise accuracy is required, the same should be determined by procurement of certified maps, surveys, plats, Flood Insurance Studies, or other official means. Waukesha County will not be responsible for any damages which result from third party use of the information and depictions herein, or for use which ignores this warning.

Notes: **FIGURE 1**
Site Map

Printed: 8/4/2015




Wisconsin Department of Natural Resources

Environmental Cleanup & Brownfields Redevelopment

BRRTS on the Web

Click the Location Name below to view the Location Details page for this Activity. Other Activities, if present, may be viewed from that page.

Basic Search >> 10-68-529106 Activity Details

10-68-529106 O ROURKE DISTRIB VACANT						
REMOVED						
Location Name (Click Location Name to View Location Details)				County	WDNR Region	
303 SENTRY				WAUKESHA	SOUTHEAST	
Address				Municipality		
303 SENTRY DR				WAUKESHA		
Public Land Survey System			Latitude	Google Maps	RR Sites Map	
			43.0000542	CLICK TO VIEW		
Additional Location Description			Longitude	Facility ID	Size (Acres)	
			-88.2480879	268113230	UNKNOWN	
Jurisdiction	PECFA No.	EPA Cerclis ID	Start Date	End Date	Last Action	
DNR RR			2004-07-13	2011-05-13		
Comments						
ACTIVITY TYPE CHANGED ON 28-SEP-04. ORIGINAL ACTIVITY NO. WAS 03-68-529106 *** ACTIVITY TYPE CHANGED ON 05/13/2011. ORIGINAL BRRTS NO. WAS 02-68-529106 *** REASON REMOVED: MERGED WITH 03-68-001323 ***						
Characteristics						
PECFA Tracked?	EPA NPL Site?	Eligible for PECFA Funds?	Above Ground Storage Tank?	Drycleaner?	Co-Contamination?	On GIS Registry? 
No	No	No	No	No	Yes	No
Actions						
Place Cursor Over Action Code to View Description						
Date	Code	Name	Comment			
2004-07-13	1	Notification				
2004-07-26	2	RP Letter Sent				
2004-08-04	2	RP Letter Sent	SENT AMENDED RP LTR			
Impacts						
Type			Comment			
Co-contamination			AUTO-POPULATED			
Groundwater Contamination			-			
Soil Contamination			-			
Substances						
Substance		Type	Amount Released	Units		
Diesel Fuel (ASTs)		Petroleum				
Gasoline - Unleaded and Leaded (ASTs)		Petroleum				
Volatile Organic Compounds (PCE, TCE)		VOC				
Engine Waste Oil (ASTs)		Petroleum				
Who						
Role		Name/Address				
Responsible Party		BETTY OROURKE ,				

BRRTS data comes from various sources, both internal and external to DNR. There may be omissions and errors in the data and delays in updating new information. Please see the [disclaimers page](#) for more information. We welcome your [Feedback](#).

The Official Internet site for the Wisconsin Department of Natural Resources
101 S. Webster Street . PO Box 7921 . Madison, Wisconsin 53707-7921 . 608.266.2621

Release 2.5.6 | 04/19/2017 | [Release Notes](#)

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GREELEY AND HANSEN

741 N. Grand Ave., Suite 308
Waukesha, WI 53186

Appendix IV

4-220 D8 Geotechnical Report, Contract Package 5,
Return Flow Pipeline Stations
0+00 to 1000+00

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Great Lakes Water Supply Program



DRAFT 4-220 D8 Geotechnical Report, Contract Package 5, Stations 0+00 to 1000+00

February 2019



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PROGRAM TEAM MEMBER CONSULTANTS:



EXECUTIVE SUMMARY

The Great Water Alliance (Program) consists of the installation of a new Water Supply Pipeline providing water from Lake Michigan to the City of Waukesha (Waukesha), and a Return Flow Pipeline to return highly treated effluent to the Lake Michigan watershed by discharging to the Root River in Milwaukee County. This Geotechnical Report presents the results of our geotechnical investigation for Contract Package 5 from STA 0+00 to STA 1000+00, which is the segment of the 30-inch Return Flow Pipeline from the Clean Water Plant (CWP) in Waukesha to the start of Contract Package 2 near the intersection of Les Paul Parkway and Sunset Drive. Drawings showing the alignment of the pipeline are included in the Contract Package 5 drawings.

Conventional open cut trench construction is planned for most of Contract Package 5. Based on our findings, it is our professional opinion that the majority of the proposed Return Flow Pipeline may be constructed using conventional open trench pipeline construction techniques as planned. However, some areas of difficult installation are anticipated. Shallow groundwater, organic soils, shallow bedrock and dense soil conditions are anticipated in some areas which may cause excavation difficulties.

Shallow groundwater (less than 14-feet below ground surface) was encountered in many of the borings in the study area. Temporary groundwater control will be necessary in some areas.

Soils encountered were variable and consisted primarily of granular soils, including sands, silts, gravel, and boulders. Organic and fill soils were also encountered in several borings. Organic soils and/or fill soils were observed at depths extending from 5- to 25-feet below grade in the borings performed along Les Paul Parkway between West Avenue and Sunset Drive. Organic soils are not considered suitable for support of the Return Flow Pipeline. Where organic soils are present at the pipe bearing grade (as well as soft, loose, or otherwise unsuitable soils), they must be removed to expose stable underlying inorganic natural soils. The over-excavated areas can be replaced with additional pipe bedding material which would be properly placed and compacted according to the Program specifications.

Dolomite bedrock and dense soils were encountered within the planned excavation depth in borings near the intersection of Les Paul Parkway and Sunset Drive. Based on observations in these borings, bedrock may be present above the anticipated excavation depth. Contractors should be aware that specialized equipment may be required to excavate an open cut trench through the dense soils and bedrock in that area.

Corrosion testing was performed on samples throughout the pipeline alignment near the assumed depth of the pipeline. The results of the testing indicate that area soils are considered corrosive to steel, and the soil corrosivity to concrete was variable. The Program team will review the corrosion test results presented in this report to evaluate corrosion protection methods for the Return Flow Pipeline.

Trenchless construction techniques are planned at a total of eight locations in the study area for this report. Jack and bore (casing) construction is planned for six locations, including one major intersection (Les Paul Parkway and Sunset Drive), one roadway crossing (East Avenue), and four railroad crossings. The presence of shallow bedrock near Les Paul Parkway and Sunset Drive may require adjustment to the planned alignment and/or profile. Horizontal Directional Drilling (HDD) is planned for two waterway crossings located in the wetland area along Les Paul Parkway between West Avenue and Sunset Drive. Organic soils and/or fill soils extended to below the planned pipe elevation in borings near the proposed HDD crossings. A pipeline supported on the organic and/or fill soils encountered in the borings could experience long term settlement, even without additional loading, and would settle significantly if Les

Paul Parkway was widened or raised in the area. Extension of the HDD section south from the planned terminus at STA 206+20 may be needed due to peat and organic soils anticipated under the planned pipeline from STA 206+20 to approximately STA 202+00.

DRAFT

SECTION 1 Introduction

1.1 Program Description

The Great Water Alliance (Program) includes a Water Supply Pipeline with pumping facilities, water reservoir, and chemical treatment that will deliver potable water to the City of Waukesha (Waukesha) from a connection to a water system supplied with Lake Michigan water. A comparable length of a Return Flow Pipeline with pumping facilities located at Waukesha's Clean Water Plant (CWP) are required to discharge highly treated effluent to the Root River (outfall location in the City of Franklin), which ultimately discharges into Lake Michigan.

This Geotechnical Report presents the results of our geotechnical investigation for Contract Package 5 from STA 0+00 to STA 1000+00, which is the Return Flow Pipeline from the Clean Water Plant in Waukesha to the start of Contract Package 2 near the intersection of Les Paul Parkway and Sunset Drive. Drawings showing the alignment of the pipeline are included in the Contract Package 5 drawings.

Pipe materials being evaluated by the Program team include ductile iron pipe (DIP) and steel pipe. Based on the Plan and Profile maps provided, the minimum depth of excavations is planned to be 10-feet along the Return Flow Pipeline. **Table 1-1** includes a summary of the design parameters used for analysis.

Table 1-1 Design Parameters Used for Analysis

Design Parameter	Value
Depth of Cover	Minimum 6.5 feet
Return Flow Pipe diameter	30 inches nominal diameter
Bedding under pipe	Minimum of 6 inches
Return Flow Pipeline trench width	Minimum of 4.5 feet
Backfill depth of Select Fill	Minimum of 1 foot above pipe
Type of backfill above Select Fill	Select Fill or Flowable Fill for pavement areas and Common Fill for landscape areas

Trench backfill materials are defined in the Program Specifications. Pipe bedding material will be installed to a minimum depth of six-inches below the pipe and to a minimum of 12-inches on the sides and above the pipe. Excavations preformed below pavement areas will be backfilled with either Select Fill or Flowable Fill, depending on the municipality. Excavations preformed below landscaped areas will be backfilled with Common Fill. Select Fill is defined as gravel, crushed stone, or other similar material which can be easily compacted. Select Fill would be compacted to at least 95% of maximum dry density as specified by the modified Proctor (ASTM D1557), while Common Fill would be compacted to at least 90% of maximum dry density (ASTM D1557). Common Fill would be the material excavated from the trench if it is found to be suitable.

Trenchless installation via jack and bore (casing) is anticipated at one major intersection, one roadway crossing, and four railroad crossings. The areas of casing require auger boring where entry and exit pits are excavated at either end of the obstacle. Hollow augers are attached to a lead cutting head on one end and the boring machine on the other. The auger string is rotated, creating a hole whereby the auger string can be advanced by hydraulic jacks.

Trenchless installation is anticipated using horizontal directional drilling (HDD) where the pipeline will cross beneath box culverts and marsh conditions along Les Paul Parkway. HDD is a steerable drilling process where the direction of the bit advancement can be controlled and monitored throughout the process to determine the path of the drill bit. An inclined surface rig first drills a small pilot hole with a drilling fluid that helps remove cuttings and stabilize the hole. The hole is then reamed to a diameter of 120% to 150% of the outside diameter of the pipe to be installed to allow for the curvature of the pipe and to allow for the return of spoils within the annular space.

After reaming, the product pipe is attached to the drill pipe at the opposite end of the drill and pulled back through the hole. In order to preclude caving of the tunnel roof, prudent care must be taken when casing or performing HDD to provide for the presence of sufficient soil materials above the crown of the excavation or above waterways or culvert structures. Difficult HDD/casing efforts may be encountered where large cobbles, boulders, very dense soils, or bedrock are present. A summary of the areas where trenchless installation is anticipated is presented in **Table 1-2**, and the planned locations and details for the trenchless crossings are shown on plan and profile drawings in the in the Contract Package 5 drawings.

Table 1-2 Trenchless Installation Areas

*Stationing	Obstacle	Roadway	Borings	Planned Trenchless Method	Estimated Length (ft.)
12+38 to 13+38	Railroad Spur	Casing	borings >200 ft. away	Casing	100
17+92 to 18+60	Railroad Spur	Casing	RF-B-3A	Casing	68
42+70 to 44+57	Driveway & RR Spur	Casing	RF-B-6A	Casing	187
92+14 to 93+53	Railroad Mainline	Casing	RF-B-12	Casing	139
159+63 to 162+19	S. East Avenue	Casing	RF-B-22, RF-B-23	Casing	256
178+46 to 182+60	Pebble Brook Box Culvert	HDD	RF-B-26, RF-B-27	HDD	414
206+43 to 218+61	Box Culvert and Marsh	HDD	RF-B-30, RF-B-30A RF-B-31, RF-B-31A RF-B-32, RF-B-33	HDD	1218
223+51 to 224+47	Les Paul Parkway	Casing	RF-B-34, RF-B-35	Casing	96

Notes: *Stationing from Draft 60% Program Drawings dated October 2018.

Parameters which are unknown at this time and therefore not factored into the analysis include:

- Sources and haul distances of the Select Fill material;
- The analysis does not evaluate potential conflicts with existing overhead and underground utilities. While consideration is given to what materials may be suitable for Select Fill or Common Fill, this report does not evaluate which specific areas are below the pavement or outside the pavement.

1.2 Regional Geology

The study area is underlain by bedrock of Silurian age that consists of dolomites of the Racine, Waukesha, and Kankakee Equivalent Formations. The dolomite is fine- to medium-grained and thin- to medium-bedded with locally cherty and fossiliferous areas. These units are considered to be competent and are commonly quarried for construction aggregates. The thinnest glacial deposits, 20-feet thick or less, are found along an approximately six-mile wide band traversing Waukesha County in a northeast direction from the Village of Eagle to the Villages of Lannon and Menomonee Falls. This band passes through the north half of Waukesha. A local outlier is a filled quarry that is currently the site of the football field for Carroll College.

The study area is mainly overlain by Pleistocene glacial deposits. The glacial deposits consist of sandy till of the Holy Hill Formation which formed from more northern material brought down by the Green Bay Lobe of the Laurentide Ice Sheet, as well as sandy/gravelly deposits formed by braided meltwater streams. These soils can include dense layers with gravel and cobbles resulting in a difficult excavation environment. Areas of loose alluvial soils exist in some valley areas and localized low-lying level areas can have peat and muck deposits derived from decaying vegetation.

1.3 Scope of Work

GESTRA has performed the following services for the Return Flow Pipeline segment of the Program.

- Contacted Diggers' Hotline to identify public utilities near the boring locations.
- Provided staking and coordinated access for field activities, utility locates and survey. The as-drilled boring locations and ground elevations were determined by the surveyor for the Program team, for inclusion in this report.
- Standard Penetration Test (SPT) borings were drilled at 1,000-foot intervals to depths of 20-feet below grade in areas that are planned to be open-cut. SPT borings were drilled to a depth of 20-feet below grade at anticipated casing locations, and SPT borings were drilled to a depth of 40-feet below grade at anticipated HDD locations. Borings RF-B-1 through RF-B-35 were completed along Contract Package 5 from STA 0+00 to STA 1000+00. Soil samples were typically collected at 2.5-foot intervals to a depth of 15-feet, then at 5-foot intervals thereafter.
- Rock drilling/coring was completed at selected borings where shallow bedrock was encountered. Rock core samples were taken in general accordance with the "Standard Practice for Rock Core Drilling and Sampling" (ASTM D2113). Rock core samples were classified and assigned a Rock Quality Designation (RQD) based on the degree of fractures in the rock. The specific drilling methods used, including the depth, rig type and crew chief, are included on each individual boring log.
- All borings were abandoned with bentonite (or bentonite/cement grout where rock cores were collected), in accordance with WDNR requirements.
- Recovered samples were returned to our laboratory for laboratory testing to assign classification and engineering properties to the soils encountered. The laboratory testing included hand penetrometer, moisture and organic contents, Atterberg Limits, and grain size analysis.
- Selected samples were submitted to a specialty corrosion testing laboratory for corrosion parameters testing. GESTRA subcontracted SoilCor Corrosion and Thermal Sciences to perform ten-point corrosion testing (for Ductile Iron Pipe corrosion evaluation) and sulfate testing (for concrete corrosion evaluation) on samples collected.

1.4 Previous Studies

A part of a previous task, GESTRA prepared Geotechnical Technical Memoranda (4-220 D1 and 4-220 D3), that presented readily available information regarding the soils near the route alternatives that were being considered for the Return Flow Pipeline. The technical memoranda were prepared as “desktop studies” to offer the means to estimate the various geotechnical risks associated with each of the route alternatives, and to develop a preliminary characterization of subsurface conditions to allow a better understanding of the subsurface challenges that will likely be encountered. Although these sources of information are not repeated in this report, the information in the technical memoranda provides important background for understanding the area soils and geology. Contractors should review the information presented in the technical memoranda. Information presented in the technical memoranda includes:

- The US Department of Agriculture / National Soil Conservation Service (USDA/NRCS) Web Soil Survey was reviewed for indications of organic soils, potential for aggressive ground chemistry, dense soil layers and high water table. Additional information obtained from the Web Soil Survey includes estimated LL and PI for consideration of suitability for trench backfill.
- Southeast Wisconsin Regional Planning Commission (SEWRPC) data was evaluated for depth to bedrock, and as an aid evaluating the water table information from the USDA/NRCS Web Soil Survey.
- The Wisconsin Department of Transportation's Highway Structures Information (WisDOT HSI) system was reviewed for bridge, culvert, and other structure borings along the alignment.
- Internal records of past projects were reviewed to evaluate if the previous borings conflict with the mapping information described above, and to identify potential sources of information which can assist in the development of an exploration plan.
- Water well records were reviewed for indications of shallow bedrock nearby the route alternatives. The records were searched in the Wisconsin Department of Natural Resources (WDNR) online database of Well Construction Reports.

SECTION 2 Exploration and Testing Procedures

2.1 Layout and Elevation Procedures

Borings were generally performed at 1,000-foot intervals along the pipeline alignment, with additional borings in the trenchless crossing areas. The Program surveyor, Ayres Associates, was responsible for laying out the boring locations as listed on the summary table in **Appendix A**. To start work prior to availability of the surveyor, GESTRA laid out several of the Return Flow Pipeline (RF) borings, and some offset from the planned location occurred in the borings laid out by GESTRA. GESTRA field crews noted any offset from a location staked by Ayres Associates, and these are shown on the boring logs. Ayres Associates provided the elevations at the ground surface, and northings/eastings for each completed boring. Boring locations are shown graphically on plan and profile drawings in the Contract Package 5 drawings.

2.2 Field Testing Procedures

GESTRA has completed Standard Penetration Test (SPT) soil borings at 40 locations along the planned pipeline alignment of Contract Package 5 from STA 0+00 to 1000+00. The soil boring logs are included in **Appendix A**.

Borings performed in open cut trench areas or casing areas were typically drilled to a depth of about 20-feet, and borings for HDD to a depth of 40-feet, unless refusal was encountered. Sampling typically consisted of 2-1/2 foot intervals to a depth of 16-feet and then five-foot intervals to the termination depth of the boring. Representative soil samples were taken in general accordance with the Standard Method for Penetration Test and Split-Barrel Sampling of Soils (ASTM D1586). Recovered soil samples were placed in a jar and recorded for type, color, moisture, and consistency, sealed and then transported to the laboratory for further review and testing, if required.

Rock core samples were taken in general accordance with the Standard Practice for Rock Core Drilling and Sampling (ASTM D2113). Rock core samples were classified and assigned a Rock Quality Designation (RQD) based on the degree of fractures in the rock. The specific drilling methods used, including the depth, rig type and crew chief, are included on the individual boring logs.

2.3 Laboratory Testing Procedures

After completion of drilling operations, the retained soil samples were transported to GESTRA's laboratory and classified by a geotechnical engineer using the Unified Soil Classification System. The engineer then assigned laboratory testing to determine important index properties of the soil layers. Tests included hand penetrometer, moisture and organic content, Atterberg limits, and grain size analysis.

GESTRA subcontracted SoilCor Corrosion and Thermal Sciences to perform 10 point corrosion testing for DIP, to be used if DIP or steel is selected for the Return Flow Pipeline. Sulfate testing for concrete corrosion evaluation was also conducted, to be used if PCCP is selected for the pipeline. Results from the corrosion tests are presented in **Appendix C**.

SECTION 3 Exploration Results

The Return Flow Pipeline will start at a new Return Flow Pumping Station (RFPS) at the CWP located at 300 Sentry Drive in Waukesha, Wisconsin. From the CWP, the pipeline will travel south along Sentry Drive to Sunset Drive. At Sunset Drive, the route will travel east to West Avenue and then travel south to Les Paul Parkway. The route will then travel northeast along Les Paul Parkway to Sunset Drive. At the southeast corner of the intersection of Les Paul Parkway and Sunset Drive, Contract Package 5 (STA 0+00 to 1000+00) ends and Contract Package 2 begins. It is our understanding that the Return Flow Pipeline will be 30-inches in diameter and will consist of DIP, steel pipe, or PCCP. Based on the Plan and Profile maps provided, the minimum depth of excavations is planned to be 10-feet along the Return Flow Pipeline.

3.1 General Subsurface Conditions

Fill material was encountered in multiple borings and varied between clayey and granular soils. The depth of fill was typically less than 6-feet deep, with the exception of the following ten borings; RF-B-1, RF-B-2, RF-B-18, RF-B-21, RF-B-22, RF-B-23, RF-B-24, RF-B-28, RF-B-31, and RF-B-32. Logs for the soil borings completed along the Return Flow Pipeline are included in **Appendix A**.

Fill was observed to be greater than 10-feet deep in the following eight borings; RF-B-2, RF-B-18, RF-B-21, RF-B-22, RF-B-23, RF-B-24, RF-B-31 and RF-B-32. Boring RF-B-2 was drilled within the CWP property. Historical aerial photos from the Land Information System Interactive Map on the Waukesha County website indicate that the CWP property was undeveloped prior to construction of the CWP. Borings RF-B-18, RF-B-21, RF-B-22, RF-B-23 and RF-B-24 were drilled on top of the embankment for West Avenue and Les Paul Parkway, and boring RF-B-28 was drilled on an access road from Les Paul Parkway to the property to the north. Borings RF-B-31 and RF-B-32 were drilled in the roadway of Les Paul Parkway, and in an area that is surrounded by marshland to the northwest and southeast. The fill material encountered in borings RF-B-31 and RF-B-32 would have been placed during the construction of the existing roadway, as soil improvement for over excavation of marsh soils.

From STA 0+00 to the intersection of West Avenue and Les Paul Parkway the native soils under fill (where encountered) were variable, with layers of loosed to medium dense sand or silt soils along with layers of lean clay. Some borings encountered very dense sand and gravel. Along Les Paul Parkway the conditions included fill and organic soils with deeper layers of silt, very dense sand and gravel, and bedrock which became more shallow toward the east end of the study area.

Based on conditions encountered in the borings, the primary issues anticipated along the segments of the Return Flow Pipeline in Milwaukee and Waukesha Counties include the following.

- Shallow water above planned cut depths.
- Very dense soils (N-value >50 blows/ft (bpf)) and/or shallow bedrock encountered above planned cut depths.
- Organic and/or fill soils above and below cut depths, and in areas of HDD or casing crossings.
- Corrosion considerations.

These issues are discussed in more detail in the following sections. Logs for the soil borings performed for the Return Flow Pipeline are included in **Appendix A**. Summary tables showing the issues encountered at each boring are included in **Appendix B**.

Pavement section thicknesses were generally determined as requested. However, in some cases the municipality that owned the roadway requested that the planned roadway boring be offset to the shoulder, beyond the pavement. Additional pavement thickness information may be available through the local municipalities. A summary of the approximate pavement section thicknesses encountered in the borings are shown in **Table 3-1**.

Table 3-1 Approximate Pavement Section Thicknesses

Return Flow Boring Number	Asphalt Thickness (in)	Concrete Thickness (in)	Aggregate Base Thickness (in)
RF-B-6	-	6	5
RF-B-10	-	9	10
RF-B-16	-	6	-
RF-B-24	-	9	14
RF-B-31	-	10	6

3.2 Shallow Groundwater

Shallow groundwater (less than 14-feet below the ground surface) is considered to be an issue for open cut trenches and for casing locations. Where HDD is used, shallow groundwater is less of a concern due to drilling fluid which is introduced during this process to remove cuttings and stabilize the hole created. HDD is anticipated to be used near boring locations RF-B-26 and RF-B-27, and again near boring locations RF-B-30 through RF-B-33, where the pipeline will cross below existing box culverts and marsh soils. Information regarding shallow groundwater in the soil borings is presented in **Table 3-2**.

Table 3-2 Shallow Groundwater Encountered in the Soil Borings

Return Flow Boring Number	Approximate Depth to Water While Drilling (ft)	Approximate Water Elevation While Drilling (ft, Mean Sea Level)	Perched/Apparent Groundwater Level
RF-B-1	11.0	787.8	Apparent
RF-B-3	12.5	789.7	Apparent
RF-B-4	10.0	788.9	Apparent
RF-B-5	12.5	790.4	Apparent
RF-B-6	10.4	797.5	Apparent
RF-B-6A	8.3	798.3	Apparent
RF-B-7	11.0	800.6	Apparent
RF-B-8	12.8	802.4	Apparent
RF-B-9A	14.0	808.3	Apparent
RF-B-10	12.0	818.8	Apparent
RF-B-15	8.0	817.7	Apparent
RF-B-16	7.5	810.5	Apparent
RF-B-17	4.0	810.7	Apparent
RF-B-18	2.8	811.1	Apparent

Return Flow Boring Number	Approximate Depth to Water While Drilling (ft)	Approximate Water Elevation While Drilling (ft, Mean Sea Level)	Perched/Apparent Groundwater Level
RF-B-19	8.0	807.0	Apparent
RF-B-20	19.0	*815.0	Apparent
RF-B-21	16.0	*819.0	Apparent
RF-B-22	6.0	828.9	Perched
RF-B-25	11.0	*824.0	Apparent
RF-B-26	12.0	*825.0	Apparent
RF-B-27	3.0	*825.0	Apparent
RF-B-28	7.0	*828.0	Apparent
RF-B-29	6.0	825.1	Apparent
RF-B-30	8.0	826.8	Apparent
RF-B-31	7.0	834.0	Apparent
RF-B-31A	4.5	833.7	Apparent
RF-B-32	5.0	*842.0	Apparent
RF-B-33	1.0	843.1	Apparent
RF-B-34	5.5	847.4	Apparent

Note: * Values represent estimated seasonal high groundwater elevations, and are assumed to be at or near ground surface elevations in the wetlands adjacent to Les Paul Parkway.

In borings where shallow groundwater was encountered, the water was typically between seven- and 14-feet below the ground surface. Groundwater was observed to be within the upper seven-feet in borings RF-B-17 and RF-B-18 along West Avenue, and in borings RF-B-27, RF-B-29, RF-B-32, RF-B-33, and RF-B-34 along Les Paul Parkway. Groundwater was encountered within the embankment along Les Paul Parkway at the following boring locations: RF-B-22, RF-B-27, RF-B-28, RF-B-31, RF-B-32 and RF-B-33. Some borings located along Les Paul Parkway were moved to the top of the roadway embankment. Therefore, groundwater elevation may be a more appropriate comparison to the planned excavation level than considering the depth to groundwater shown on the boring logs.

Occasional perched groundwater seams may be anticipated along the entire embankment of Les Paul Parkway from West Avenue to Sunset Drive. The contractor will need to develop a plan for managing the apparent groundwater as well as the perched groundwater along the stretch of Les Paul Parkway so that any excavations do not affect the integrity of the existing embankment and undermine the existing pavement. The observed groundwater conditions during and at the completion of drilling operations, and estimated high groundwater levels based on conditions during drilling operations, coloration, and moisture content are summarized in **Appendix B**.

The degree of groundwater control issues will depend upon soil type, the depth of the excavation below groundwater, perched versus apparent groundwater, the length of time excavation remains open, and the effectiveness of the dewatering system. If excavations extend only a few inches or so below the groundwater or into a small volume of perched groundwater, it is expected that filtered sump pumps or other conventional means should suffice to control the groundwater. For excavations that extend to significant depths below the groundwater, or into large volumes of perched groundwater, prolonged dewatering with a series of sump or well points and high capacity sump pumps, or other more comprehensive means, may be necessary to facilitate construction. A qualified dewatering contractor

should be engaged to review the soils and groundwater conditions to determine the appropriate means and methods for effective dewatering. Dewatering is recommended to be performed to a depth of at least two-feet below the lowest excavation depth.

It should be noted that the estimated seasonal high groundwater elevations, based upon soil redoximorphic features, coloration, and moisture content, were generally higher than the free water levels observed during the exploration. As such, there is the potential for the groundwater levels to be higher than those observed during the exploration based upon seasonal variations and recent precipitation events. However, where the subsoils consist of cohesive soils, and the groundwater is at shallow depths below existing grade, the movement of free water into the excavation is generally expected to be relatively slow, except possibly where granular seams are present.

Fluctuations in the groundwater level should be anticipated throughout the year depending on variations in climatological conditions and other factors not apparent at the time the borings were performed. The possibility of groundwater level fluctuation and perched groundwater conditions should be considered when developing the design and construction plans for the Program. Where it is desired to better estimate the groundwater levels along the pipeline alignment, monitoring wells could be installed, and the groundwater levels observed over an extended period. It is recommended that the contractor verify the groundwater levels and dewatering requirements prior to bidding and construction.

3.3 Dense Soils or Bedrock

Very dense soils (SPT N-value >50 bpf) and/or bedrock was encountered at shallow depths (< 20-feet) in borings performed near the Waukesha County segment of the Return Flow Pipeline.

- CWP Area: Very dense soils were encountered at a depth of five feet in boring RF-B-3, and at a depth of about seven feet below grade in boring RF-B-3A. These borings are located where the Return Flow Pipeline will pass along the east side of the CWP. Open cut trench installation is planned for most of this area, with jack and bore casing installation planned at two crossings of a railroad spur line. Contractors should be aware that very dense soils will likely be encountered above the planned excavation depth and that specialized equipment may be needed to excavate or install casing in this area.
- Les Paul Parkway and Sunset Drive: Very dense soils and/or bedrock were encountered in borings located near the intersection of Les Paul Parkway and Sunset Drive. Dolomite bedrock was encountered at a depth of six-feet in boring RF-B-35, and 17-feet in RF-B-34. Soil boring logs are presented in **Appendix A**.

The trenchless excavating contractor should be provided with a complete copy of this report. In the area of trenchless excavations, very dense soils may be present at the proposed invert elevations, as indicated in the boring logs. It may be beneficial to perform test pit excavations to better evaluate the composition of the subsoils, identify areas of cobbles/boulders, and confirm that trenchless methods are feasible.

3.4 Organic Soils

Organic soils were encountered in borings performed near the intersection of Les Paul Parkway and West Avenue, and along the portion of the pipeline alignment adjacent to Les Paul Parkway. The organic soils encountered within the borings typically consisted of organic/elastic silt and/or black clayey soils with moisture contents ranging between 46% and 150%, and loss on ignition (LOI) test results ranging between 2.3% and 18.5%. Peat was approximately 13-feet thick in boring RF-B-30A, with organic silt extending to a depth of 18-feet. A peat layer was encountered between six- and nine-feet below grade in boring RF-B-18.

Fill depths within the embankment of Les Paul Parkway may indicate possible occurrences of organic soils outside the embankment. Fill material encountered in the borings performed along Les Paul Parkway would have been placed during the construction of the existing roadway as soil improvement for over-excavation of marsh soil below the pavement/ embankment section. More organic soil and less fill could be anticipated in excavations further from the roadway embankment.

Organic soil and fill depths typically ranged between five-and 13 feet-deep near the area just north of the intersection of Les Paul Parkway and West Avenue. Near the intersection of Les Paul Parkway and East Avenue, the depths of the organic and fill soils increased and varied between 11- and 25-feet below grade. The depths of the organic and fill soils ranged from 10- to 18-feet below grade near the easternmost part of the segment along Les Paul Parkway.

The USDA/NRCS Web Soil Survey maps mapped Houghton Muck, Palms Muck and Ogden Muck along the entire stretch of Les Paul Parkway from West Avenue to Sunset Drive, and along East Avenue from the intersection with Les Paul Parkway to approximately 1,700-feet north. Houghton, Palms and Ogden Muck soils can be high in organics and can contain peat layers.

Table 3-3 Organic Soils Encountered in the Soil Borings

Water Supply Boring Number	Estimated Depth of Organics and/or Fill Soils (ft) *	Estimated Elevation of Inorganic Native Soil (ft, MSL)	Comments
RF-B-12	4.8 (buried topsoil)	839.2	Near Railroad
RF-B-18	13.5 (Fill)	800.4	Les Paul & West Ave.
RF-B-21	25.0 (Fill over MH)	803.6	Marsh along Les Paul
RF-B-22	11.4 (Fill)	823.5	Marsh along Les Paul
RF-B-23	13.5 (Fill)	823.6	Marsh along Les Paul
RF-B-24	11.4 (Fill)	822.0	Marsh along Les Paul
RF-B-25	6.1 (Fill)	818.8	Marsh along Les Paul
RF-B-27	6.1 (Fill)	819.6	Marsh along Les Paul
RF-B-28	10.0 (Fill over clay)	821.1	Marsh along Les Paul
RF-B-29	6.0 (Fill)	825.1	Marsh along Les Paul
RF-B-30	13.5 (Organic silt)	821.3	Marsh along Les Paul
RF-B-30A	17.8 (Peat & organic silt)	815.9	Marsh along Les Paul
RF-B-31	14.8 (Fill)	826.2	Marsh along Les Paul
RF-B-32	13.9 (Fill)	829.0	Marsh along Les Paul
RF-B-33	9.8 (Fill)	834.3	Marsh along Les Paul

Note: * Depth indicated by organic soil encountered in the boring, or inferred by the depth of fill soils beneath the existing roadway.

Organic and/or fill soils are not considered suitable for support of the Return Flow Pipeline. Where organic soils are present at the pipe bearing grade (as well as soft, loose, or otherwise unsuitable soils), these must be removed to expose stable underlying inorganic natural soils. The over-excavated areas can be replaced with additional pipe bedding material which would be properly placed and compacted according to the Program specifications.

Organic soils are not recommended for re-use as backfill materials due to the potential for settlement over time and the difficulty of being properly compacted. Where present, these materials must be replaced with materials meeting the Program specifications for Common Fill or Select Fill, as appropriate.

HDD is planned for waterway crossings in the wetland area along Les Paul Parkway between West Avenue and Sunset Drive. Organic soils and/or fill soils were encountered near the proposed HDD crossings, and extended to depths below the planned invert elevations of the crossings at some boring locations. There is a potential for pipeline settlement where these compressible soils exist below the proposed crossing invert elevations. Where the compressible soils remain beneath the pipeline, settlement should be expected due to secondary compression of the organic soils at these crossings. In addition, future settlement may be induced by changes in the overburden pressure if there is any future grade increase or widening of the Les Paul Parkway roadway embankment. To better define the soils in this area, additional borings are planned, and will be included with a future submittal.

3.5 Corrosion Potential

Corrosion testing was performed on samples throughout the alignment near the assumed depth of the pipeline. Due to the limited amount of soil collected in a split spoon sampler, multiple similar soil samples had to be combined from the same or adjacent borings to make a test sample. The test results were evaluated against Appendix A of the American National Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems issued by the American Water Works Association (AWWA). For a given soil sample, each parameter is evaluated and assigned points according to its contribution to corrosivity. The points for all five areas are totaled, and if the sum is 10 or more, the soil is considered corrosive to DIP and protective measures should be taken. Based on the samples tested, the following point values were assigned. Sulfate content was determined for each sample and compared to the values in Table 4.2.1 of ACI 318R. Based on this table, the Exposure Classes in **Table 3-4** were assigned to the samples tested.

Table 3-4 Corrosion Test Results

Boring Number	Sample Number(s)	Point Value	Exposure Class
RF-B-4	SS-4, SS-5	5	S2
RF-B-6 / RF-B-6A	SS-5	5	S2
RF-B-8	SS-4, SS-5	4	S2
RF-B-10	SS-3, SS-4	12	S2
RF-B-12	SS-4, SS-5, SS-6	0	S0
RF-B-14	SS-3, SS-4	2	S2
RF-B-16	SS-4, SS-5, SS-6	2	S2
RF-B-20	SS-4, SS-5, SS-6	11	S0
RF-B-22	SS-4, SS-5	14	S2
RF-B-23 / RF-B-24	SS-6 / SS-6	4	S1
RF-B-30	SS-4, SS-5, SS-6	19	S2
RF-B-32	SS-4, SS-5, SS-6, SS-7A	4	S0

Notes: S0 = Not Applicable, S1 = Moderate, S2 = Severe, S3 = Very Severe

3.6 Soil Re-Use as Common Fill

Suitable soils for Common Fill consist of gravel, sand, silt and clay soils or a combination of these groups. The material used for Common Fill should be free of rock or gravel larger than three-inches in any dimension, clumps of clay larger than six-inches in any dimension, organic soils with loss on ignition content 5% or greater, debris, waste, frozen materials, vegetation and other deleterious material. Unsuitable soils include high plasticity silt (MH), high plasticity clay (CH), organic silt (OL), organic clay (OH) and peat (PT).

GESTRA performed limited laboratory testing to determine if the soils generated from the open trench excavations meet the preliminary specifications for use as Common Fill per the Standard Specification Section 31 23 23 2.4.E Common Fill. Based on the tested soils encountered in the borings along the pipeline alignments, the large majority of soils excavated from the open cut trenches from STA 0+00 to the intersection of West Avenue and Les Paul Parkway should satisfy the criteria for use as Common Fill. Soils along Les Paul Parkway include areas of peat and organic soil which would not be suitable for use as Common Fill. Within the roadway embankment much of the organic material appears to have been excavated and replaced for construction of the roadway, while at the toe of slope significant amounts of organic soil can be expected.

3.7 Soil Re-Use as Select Fill

GESTRA performed limited laboratory testing to determine if the soils generated from the open trench excavations meet the Standard Specification Section 31 23 23 2.2 Select Fill. Based on the tested soils encountered in the borings along the pipeline alignments and within the planned excavation depth the soils along the alignment do not appear to meet the criteria for use as Select Fill.

SECTION 4 Recommendations

Based on the results of our investigation, it is our professional opinion from a geotechnical standpoint, the pipeline alignment for Contract Package 5 from STA 0+00 to STA 1000+00 should be suitable for use of open cut trench, shoring, and pipeline construction methods over most of the alignment. However, areas of bedrock, dense soils, organic soils and shallow groundwater will affect site grading and construction. HDD and casing will be required at some locations such as heavily-trafficked intersections, areas of marsh soil and waterways. The anticipated HDD and casing locations are listed on **Table 1-2**, and the planned locations and details for the trenchless crossings are shown on plan and profile drawings in the in the Contract Package 5 drawings.

4.1 Open Cut Trench Areas

4.1.1 Dense Soils or Bedrock

Very dense soils, defined as soils with SPT N-values of 50 bpf or greater, with areas of possible cobbles and boulders, were present in some borings along the alignment, as shown on the Summary Table of Return Flow Pipeline Borings in **Appendix B**. Layers of very dense soils were located in borings along the east side of the CWP (RF-B-3 and RF-B-3A). Areas of very dense soils may also be encountered at other locations in the area.

Near the intersection of Les Paul Parkway and Sunset Drive, dolomite bedrock was encountered in borings RF-B-34 and RF-B-35. Dolomite bedrock was encountered at six-feet bgs (elevation 849.2 feet, MSL) in boring RF-B-35. Based on these observations, bedrock should be expected above the planned invert elevation of the open cut trench to the east of the intersection of Les Paul Parkway and Sunset Drive. In open cut trenches, bedrock, very dense soils (SPT N>50 bpf) and possible cobbles and boulders may result in difficult excavation and longer excavation times.

Bedrock encountered along the pipeline alignment includes variably fractured and weathered dolomite. The majority of the rock formations are anticipated to be rippable to marginally rippable, but layers of less fractured rock that are very hard and difficult to excavate may be encountered beneath the more weathered zones. Rock trenchers or large excavators have generally been able to excavate within the weathered rock units, but may not be able to remove hard and less fractured zones of rock. It has been our experience that mechanical removal by hammering may be difficult and require pre-drilling to help break up the rock. Therefore pre-drilling should be anticipated where rock removal is planned into relatively sound bedrock. It may be beneficial to perform test pit excavations to better evaluate the composition of the subsoils, identify areas of cobbles/boulders, and determine if alternative methods such as ripping by the backhoe with specialized single point or bucket ripper attachment. Test pits will also help estimate the effort and time which will be necessary for excavation.

4.1.2 Temporary Groundwater Control

Shallow groundwater is considered to be an issue for open cut pipeline installation. Areas of shallow groundwater, where groundwater was encountered within the borings at or above the estimated pipeline invert elevation of 9- to 11.5-feet below existing grades, were encountered within most of the alignment as shown on the Summary Table of Return Flow Pipeline Borings in **Appendix B**. Groundwater has been encountered as shallow as one-foot below ground surface in the area of the pipeline alignment. Groundwater is expected to be encountered in excavations for the pipeline. Groundwater seepage is expected within the proposed depth of excavation along most of the pipeline alignment. The amount of seepage may be influenced by predominant soil types encountered; smaller amounts of seepage may be anticipated in the perched groundwater areas and the predominantly cohesive soils while larger

amounts of seepage may be encountered in the more permeable, granular soils, and where an apparent groundwater table is encountered.

Some method of groundwater control is anticipated to be necessary in at least the areas of the borings identified on the Summary Table in **Appendix B**, where water was encountered above the estimated pipeline invert elevation. The degree of water control issues will depend upon:

- soil type;
- the depth of the excavation below the water;
- perched versus apparent groundwater;
- the length of time the excavation remains open; and
- the effectiveness of the dewatering system.

If excavations extend only a few inches or so below the groundwater or into small volumes of perched groundwater, it is expected that filtered sump pumps or other conventional means should suffice to control the groundwater. However, for excavations which extend to significant depths below the groundwater, or into large volumes of perched groundwater, prolonged dewatering with a series of sumps or well points and high capacity pumps, or other more comprehensive means, may be necessary to facilitate construction. A qualified dewatering contractor should be engaged to review the soils and groundwater conditions to determine the appropriate means and methods for effective dewatering. Dewatering is recommended to be performed to a depth of at least two-feet below the lowest excavation depth.

It should be noted that the estimated seasonal high groundwater elevations shown on the Summary Table in **Appendix B** were based upon soil redoximorphic features, coloration, and moisture content, and were generally higher than the free water levels observed during the exploration. As such, there is the potential for the water levels to be higher than those observed during the exploration based upon seasonal variations and recent precipitation events. However, where the subsoils consist of cohesive soils, and the groundwater is at shallow depths below existing grade, the movement of free water into the excavation is generally expected to be relatively slow, except possibly where granular seams are present.

Fluctuations in the groundwater level should be anticipated throughout the year depending on variations in climatological conditions and other factors not apparent at the time the borings were performed. The possibility of groundwater level fluctuation and perched groundwater conditions should be considered when developing the design and construction plans for the Program. Where it is desired to better estimate the groundwater levels along the pipeline alignment, monitoring wells could be installed, and the groundwater levels observed over an extended period. Or, test pits could be observed in areas where shallow groundwater is anticipated, to better estimate water levels in an open excavation and relative rates at which the excavation water levels rise, to better estimate the necessary dewatering efforts. It is recommended that the contractor verify the groundwater levels and dewatering requirements prior to bidding and construction.

4.1.3 Pipe Subgrade

The large majority of soils encountered from STA 0+00 to the intersection of West Avenue and Les Paul Parkway should provide suitable support for the pipeline. Soils along Les Paul Parkway include areas of peat and organic soil which would not be suitable for pipe support. A summary of depth of organic soils is included in **Table 3-3**, which includes depth of fill under the roadway which suggests the depth of organic soils which could occur outside of the

roadway embankment. While fill encountered in the borings generally appeared to be suitable for pipe support, existing fill can contain areas of wet, very loose, or soft materials, especially where these materials were placed in a generally uncontrolled manner.

Fill and organic soils were encountered in several borings located adjacent to Les Paul Parkway, between West Avenue and Sunset Drive. Areas of wet, very loose, soft, organic, or otherwise unsuitable soil conditions may be encountered in the trench excavations. The depth of the organic and fill soils extended up to approximately 18-feet below grade in the boring RF-B-30A, and may extend to greater depths at other locations. Where they are encountered in an open cut trench at or below the pipe subgrade elevation, limited undercutting along with the placement of a layer of additional granular bedding material will be necessary to develop a stable working surface. The over-excavated materials can be replaced with additional pipe bedding material which is properly placed and compacted according to the Program specifications.

There is a potential for pipeline settlement where these compressible soils exist below the pipeline elevations. Pipeline settlement should be expected due to secondary compression of the organic soils at these locations. In addition, future settlement may be induced by changes in the overburden pressure due to changes in the design of the Les Paul Parkway roadway embankment. Any future widening of the embankment, or increase in the height of the embankment, has a potential to induce additional settlement where the compressible organic soils exist below the pipeline.

4.1.4 Pipe Bedding and Backfill

The materials encountered in the borings at the elevations of the proposed trench bottoms generally consist of stiff clays, silty sands, and variably weathered and fractured bedrock. In general, these materials appear suitable for pipeline support. However, organic and fill soils were encountered in several borings performed along Les Paul Parkway, between West Avenue and Sunset Drive. In the event that groundwater or soil moisture conditions cause soft or unstable trench bottoms, these areas may require mitigation in the form of removal and replacement with additional bedding material.

Prior to placement of bedding, the exposed subgrade at the base of the trench excavations should be examined to detect soft, loose, or unstable areas. Loose materials at trench bottoms resulting from excavation disturbance should be removed to firm material. If soft or unstable areas are encountered, these areas should be over-excavated to a depth of at least two-feet or to a firm base and be replaced with additional bedding material. Where excavations cross existing trench backfill materials, the need for and extent of over-excavation or stabilization measures should be evaluated by the Geotechnical Engineer on an individual basis. Bedding materials should meet the requirements as indicated in the Program Specifications.

Bedding of the pipe should be performed in accordance with normally accepted procedures for the class of pipe being used. Backfilling of the excavation should be done in such a way as to provide relatively uniform lateral support to the pipe until the backfill extends over the pipe. This can be accomplished by alternating fill placement at approximately one-foot intervals to both sides of the pipe. Pipe bedding and initial backfill requirements may be specified by the Owner based on planned pipe types, bedding conditions, and other factors beyond the scope of this study. Accordingly, the Program Team should develop final Program specifications and details.

Non-woven geotextile is planned to prevent significant amounts of fine soil particles from migrating into the bedding and Select Fill backfill material. Geotextile is also planned where soft, loose, and/or organic soils are observed which will not provide adequate confinement of the backfill materials to allow for proper backfill compaction and prevention

of lateral bulging of the backfill resulting in settlement. A table is attached in **Appendix E** which presents estimated locations for either a complete wrap of the bedding in geotextile, and/or placement of geotextile fabric between trench sidewalls and Select Backfill materials.

Within the roadway, sidewalk, or other structural areas, the trench excavation above the bedding material should be backfilled either with Flowable Fill or Select Fill. The type of backfill material used will depend on the municipality requirements. The Flowable Fill or Select Fill should be meet the requirements as indicated in the Program Specifications.

Flowable Fill is defined as a mixture of sand, coarse aggregate, water, and cement. The Flowable Fill used to backfill the trenches should meet the air content, slump and compressive strength as indicated in the Standard Specification Section 31 23 23 2.4 Flowable Fill.

Select Fill if used must be compacted in uniform lifts which are sufficient to achieve a minimum density of 95% of the maximum density as determined by the modified Proctor method (ASTM D1557). Select Fill is defined as gravel, crushed stone, or other similar material which can be easily compacted to the 95% specified. Very fine sand or uniformly graded granular materials are not acceptable as use for Select Fill.

In non-structural areas, such as landscape areas, Common Fill soils obtained from the excavation spoils can be used where it meets Program Specifications. Suitable soils for Common Fill consist of gravel, sand, silt and clay soils or a combination of these groups. The material used for Common Fill should be free of rock or gravel larger than three-inches in any dimension, clumps of clay larger than six-inches in any dimension, organic soils with loss on ignition content 5% or greater, debris, waste, frozen materials, vegetation and other deleterious material. Common Fill must be compacted to a minimum of 90% of the maximum dry density as determined by the modified Proctor method (ASTM D1557).

Backfill of trenches should not be performed with water standing in the trench. It is recommended that mechanical compaction be used to achieve uniform compaction of the fill material. Proper moisture control is essential to reduce the amount of compactive effort necessary to achieve the specified density. This is especially true of clayey soils, where drying may be required to achieve near optimum moisture levels prior to compaction. A sheepsfoot roller is generally required for compaction of clayey soils, whereas a vibratory smooth drum roller or backhoe mounted vibratory plate compactor is preferred for granular material. The selection of backfill materials for various applications should be done in consultation with the soils engineer. Similarly, the evaluation of the subgrade and placement and compaction of fill for structural applications should be monitored and tested by a qualified representative of the soils engineer. Additional guidance can be provided at the time of construction in the selection process for grade-raising fill and trench backfill.

Organic soils are not recommended for re-use as backfill materials due to their potential for settlement over time and their difficulty in being properly compacted. Where present, these materials must be replaced with materials meeting the Program specifications for Common Fill or Select Fill, as appropriate.

4.1.5 Excavation Stability

Sloping, shoring, or bracing of the excavation sidewalls will be necessary as appropriate in open cut areas of the pipeline installation. Trenching in granular, organic, and fill soils may be difficult due to the instability of vertical slopes, and will therefore require a flattening of trench sides, or some other means of protection, to facilitate

construction and to protect life and property. Severe instability and substantial sloughing and caving can be expected within unprotected excavations in at least areas of granular or organic soils, especially encroaching upon and extending below the groundwater, or where perched conditions are present. Sloped excavations may not be feasible in these cases, depending on final invert elevations and the resulting required depths of the trench at the boring locations. Shoring, bracing, trench boxes, or other means of protection will likely be necessary, at least in some locations.

Shoring system design and installation on this Program should be the responsibility of the contractor. Shoring systems should be designed by a registered Professional Engineer experienced in the design of shoring systems. Excavation of test pits at critical locations along the pipeline alignment is recommended to assist the shoring designer in evaluating the appropriate shoring systems for the Program.

Trench shields, speed shoring, trench jacks, internally braced systems, or other forms of shoring may be used where appropriate throughout the Program, provided local, state and federal regulations are met. Sheet piles are not well suited to driving in areas underlain by soils containing cobbles and boulders or bedrock, such as those encountered in some borings near the Waukesha County segment of the Return Flow Pipeline.

The extent of bracing or other protection of open cut excavations will depend upon depth of cut, groundwater conditions, soils encountered, length of time the excavation will be open, area available for excavation, and local governing regulations. Cohesive soils may appear to stand nearly vertical in shallow excavations for short periods of time. However, soil creep, surcharge loads, precipitation, subsurface groundwater seepage, construction activity vibrations and other factors may cause these soils to cave within an unpredictable period of time. Construction should be performed in accordance with "The Standard Specifications for Sewer and Water Line Construction" for the State of Wisconsin.

Where excavations encroach upon or extend below the groundwater or perched zones and into fine sand, silt, or soft clay, they may become substantially unstable when the confining effect of the overburden is removed. Significant sloughing or caving of sidewalls may also occur. Some over-excavation of softened or loosened soils, in conjunction with the use of a crushed stone working mat, may be necessary to establish a stable bearing subgrade. Additionally, significantly widened excavations may result, or be required to maintain or achieve sidewall stability. Proper dewatering measures will also be necessary.

Excavations should be constructed in accordance with current Occupational Safety and Health Administration (OSHA) guidelines to protect workers and others during construction. These regulations should be strictly enforced; otherwise, workers could be in danger and the owner(s) and the contractor(s) could be liable for substantial penalties. The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case, should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

Where trenches are excavated in existing roadway areas or near existing facilities, we recommend shoring systems be designed to provide positive restraint of trench walls. Where positive restraint of trench walls is not provided, lateral deformation of the trench walls may result in ground cracks, settlement and/or other ground movements that may affect adjacent underground utilities as well as surface improvements. If trench walls deflect laterally in

pavement areas, parallel cracks may develop in the pavement and underlying soils that may require repair. The contractor should be made aware of this potential condition in order that preventative measures can be implemented or repair measures provided for. The shoring designer should perform a deflection analysis of the shoring system. If movements are greater than the tolerance of existing Program features (utilities, pavements, structures, etc.) tie-backs, dead-man anchors, or cross bracing may be needed to reduce deflections. Design using the at-rest pressure and/or more stringent tie-back or bracing systems may be required in the vicinity of improvements that cannot withstand lateral movements.

Lateral forces due to areal surcharges (such as stockpiled soil, equipment, etc.) placed adjacent to the shoring may impart additional loads to the shoring system. These conditions should be evaluated by the shoring designer on a case-by-case basis.

Shoring systems typically are removed as part of the trench backfill process. Depending on the shoring system used, the removal process may create voids along the sides of the trench excavation. If these voids are left in place and are significantly large, backfill may shift laterally into the voids resulting in settlement of the backfill and overlying pavements. Therefore, care should be taken to remove the shoring system and backfill the trench in such a way as to not create these voids. If the shoring system requires removal after backfill is in place, resulting voids should be filled with sand and cement slurry or other approved grout mix. If shoring cannot be removed without causing voids and/or disturbing pipes or structures, the shoring should be cut off above the pipe or structure and be left in place. Timber lagging to be left in place should be pressure treated.

4.2 Trenchless Construction

Trenchless installation is proposed for eight locations along the Return Flow Pipeline in the study area for this report. A summary of the areas where trenchless installation is anticipated is presented in **Table 1-2**, and the planned locations and details for the trenchless crossings are shown on the plan and profile drawings included in the Contract Package 5 drawings. Trenchless installation via jack and bore (casing) is anticipated at one major intersection, one roadway crossing, and four railroad crossings. The areas of casing require auger boring where entry and exit pits are excavated at either end of the obstacle. Trenchless installation is anticipated using HDD where the pipeline will cross beneath box culverts and marsh conditions along Les Paul Parkway. Anticipated soil types based on soil borings completed for each trenchless crossing are presented in **Table 4-1**.

Table 4-1 Anticipated Soil Types for Trenchless Crossings

*Stationing	Obstacle	Planned Trenchless Method	Borings	General Description of Anticipated Soil Type
12+38 to 13+38	Railroad Spur	Casing	borings >200 ft. away	Fill, medium dense sand and gravel, very dense soils
17+92 to 18+60	Railroad Spur	Casing	RF-B-3A	Fill, medium dense sand and gravel, very dense soils
42+70 to 44+57	Driveway & RR Spur	Casing	RF-B-6A	Loose to medium dense silt
92+14 to 93+53	Railroad Mainline	Casing	RF-B-12	Medium to dense gravel with sand

*Stationing	Obstacle	Planned Trenchless Method	Borings	General Description of Anticipated Soil Type
159+63 to 162+19	S. East Avenue	Casing	RF-B-22, RF-B-23	Fill, possible peat and organics
178+46 to 182+60	Pebble Brook Box Culvert	HDD	RF-B-26 RF-B-27	Soft lean clay, medium dense silt
206+43 to 218+61 **	Box Culvert and Marsh	HDD	RF-B-30 RF-B-30A RF-B-31 RF-B-31A RF-B-32 RF-B-33	Fill, Peat and organics, medium dense sand and silt, very dense soils, dolomite bedrock
223+51 to 224+47	Les Paul Parkway	Casing	RF-B-34 RF-B-35	Very dense soils, dolomite bedrock

Notes: *Stationing based on the Draft 60% Program Drawings.

** Borings were performed near the marsh along Les Paul Parkway. The depth of fill material may be an indication of soil correction that was performed during the construction of the roadway. Outside of the roadway, organic and soft soils may be anticipated to the estimated fill depth noted in **Table 3-3**.

Groundwater will likely be encountered at several of the crossing locations. Borings RF-B-6A and RF-B-34 suggest that apparent groundwater associated with a regional groundwater table may be expected at jack and bore locations planned nearby, while borings RF-B-22 and RF-B-23 suggest jack and bore will likely encounter perched groundwater conditions with a lower quantity of water seepage. Any dewatering system chosen should be properly designed by an experienced local dewatering contractor utilizing the soil borings performed at the time of construction as well as the available public well information and records in the vicinity of the pipeline alignments. The trenchless installation methods employed for the pipeline must be appropriately chosen and be capable of advancement through wet soils that may be substantially unstable.

Organic soils and/or fill soils extended to below the planned pipe elevation in borings near the proposed HDD crossings along Les Paul Parkway. A pipeline supported on the organic and/or fill soils could experience long term settlement, even without additional loading, and would settle significantly if Les Paul Parkway was widened or raised in the area. Extension of the HDD section south from the planned terminus at STA 206+20 may be needed due to Peat and organic soils anticipated under the planned pipeline from STA 206+20 to approximately STA 202+00. To better define the peat and organic soils in this area, additional borings are planned, and will be included with a future submittal.

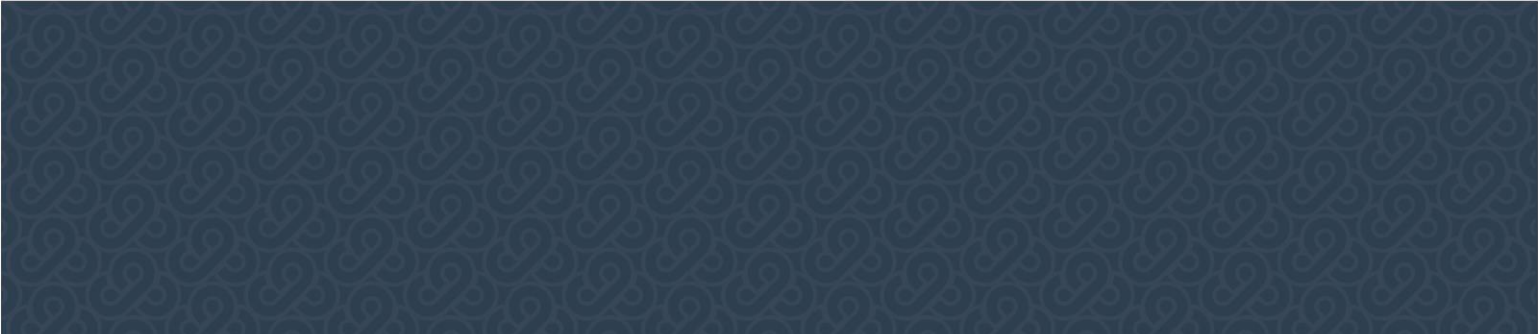
The borings near the planned jack and bore at Les Paul Parkway and Sunset Drive (RF-B-34 and RF-B-35) encountered very dense gravel over dolomite bedrock. Based on these observations, bedrock is expected to be present above the anticipated invert elevation. Additional soil boring exploration is planned to evaluate an alternate location for a crossing of Les Paul Parkway. The results will be addressed in a future submittal of this report.

GESTRA recommends that each trenchless crossing be installed without interruption, as much as possible. During jack and boring or HDD, the pore water pressures within the surrounding soil are increased and when the boring

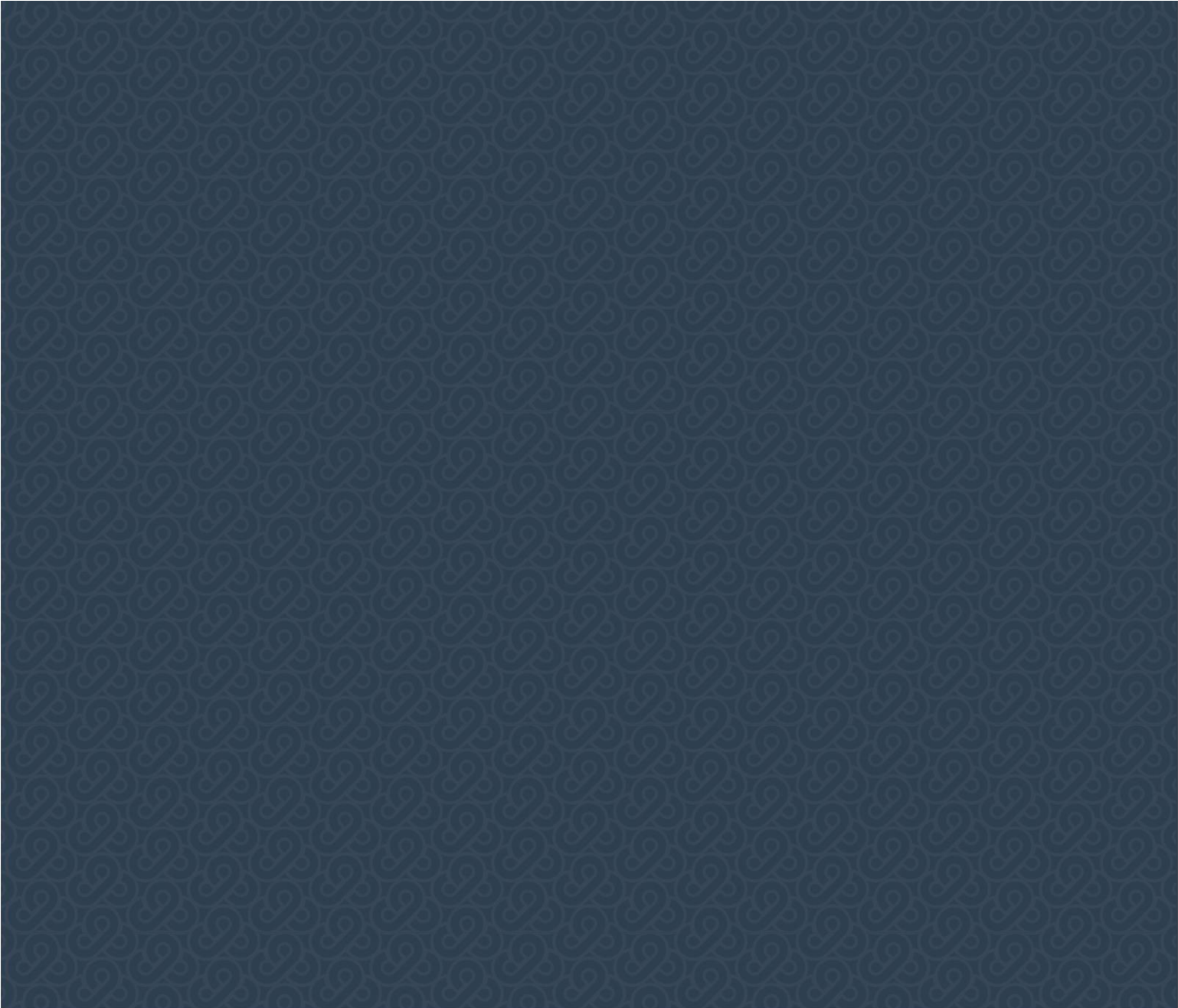
operation is halted, the pore water pressures relax. This process may cause the casing to “freeze” in-place making it very difficult to further advance the casing or HDD following an interruption in the installation process.

Surface features must be monitored by the contractor for settlement caused by ground loss and collapse of the soil above and around the pipe due to alterations of the stresses in the soil. In order to preclude caving of the tunnel roof, prudent care must be taken when casing or performing HDD to provide for the presence of sufficient soil materials above the crown of the excavation or above waterways or culvert structures. Additional surface ground movement may occur due to running ground conditions at the face of the boring or collapse of soil into voids resulting from the removal of boulders at the face. Ground movement associated with trenchless construction is influenced by the methods of construction and the quality of workmanship as well as the subsurface conditions.

Where HDD methods are employed, maintaining adequate bentonite pressure in the overcut annulus during installation and permanently grouting the annulus following installation will help to minimize settlements. Pipe installation must be at a sufficient depth to prevent drilling fluid loss under pressure to the surface of the site. This is especially of concern when installing below soft, loose, or organic soil deposits such as those encountered in boring RF-B-30A. Dewatering fine sand soil to limit the potential for ground loss associated with running ground conditions at the face of the excavation will also help minimize surface settlements. If surface settlement exceeds one-inch, corrective measures should be undertaken from the ground surface by the contractor. If the settlement damages any existing surface structures or underground utilities, the use of compaction grouting techniques should be performed as soon as possible to stabilize and restore the damaged structures.



Appendix A – Test Boring Logs and Nomenclature



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APPENDIX A – TEST BORING LOGS AND NOMENCLATURE



Horizontal Datum: NAD 27, Wisconsin State Plane, South Zone

Vertical Datum: NGVD 29

Stakeout					Recorded					
Code	Northing	Easting	Type	Staked By	Northing	Easting	Elevation	Δ Northing	Δ Easting	Recorded Coordinates used
RF-B-1	369355.71	2467272.42		Ayres	369355.727	2467272.428	798.797	0.02	0.01	Stakeout
RF-B-2	369783.54	2467827.56		Ayres	369772.276	2467833.94	806.121	-11.26	6.38	Stakeout
RF-B-3A	369709.75	2468300.96		Ayres	369709.706	2468300.971	803.911	-0.05	0.01	Stakeout
RF-B-3	369234.37	2468402.56		Ayres	369234.736	2468398.818	802.153	0.37	-3.74	Stakeout
RF-B-4	368506.98	2468409.17		Gestra	368515.654	2468404.043	798.897	8.67	-5.13	As-Drilled
RF-B-5	367731.36	2468380.56		Gestra	367737.288	2468374.252	802.923	5.93	-6.31	As-Drilled
RF-B-6	366820.51	2468253.37	Pavement	Gestra	366793.669	2468242.494	807.919	-26.84	-10.88	As-Drilled
RF-B-6A	366959.43	2468241.62	Casing	Ayres	366984.267	2468244.539	806.568	24.84	2.92	As-Drilled
RF-B-7	366059.15	2468246.23		Gestra	366061.659	2468247.956	811.605	2.51	1.73	As-Drilled
RF-B-8	365317.61	2468250.85		Gestra	365336.782	2468248.289	815.171	19.18	-2.56	As-Drilled
RF-B-9	365063.01	2468689.67		Gestra	365062.271	2468729.603	822.299	-0.74	39.94	As-Drilled
RF-B-10	365084.72	2469654.02	Pavement	Gestra	365077.649	2469646.304	830.818	-7.07	-7.71	As-Drilled
RF-B-11	365110.31	2470384.57		Gestra	365096.222	2470378.047	834.797	-14.08	-6.52	As-Drilled
RF-B-12	365121.54	2471258.70	Casing	Gestra	365118.469	2471218.362	843.965	-3.07	-40.33	As-Drilled
RF-B-13	364552.57	2471646.50		Gestra	364557.219	2471645.748	853.06	4.65	-0.75	As-Drilled
RF-B-14	363928.14	2471651.66		Gestra	363934.529	2471639.132	846.81	6.38	-12.53	As-Drilled
RF-B-15	363118.01	2471692.26		Gestra	363100.44	2471692.373	825.663	-17.57	0.11	As-Drilled
RF-B-16	362438.21	2472060.47	Pavement	Gestra	362446.612	2472051.152	818.006	8.40	-9.32	As-Drilled
RF-B-17	361809.67	2472100.38		Gestra	361812.522	2472099.642	814.657	2.85	-0.74	As-Drilled
RF-B-18	361256.21	2472097.77		Gestra	361273.982	2472086.731	813.861	17.77	-11.04	As-Drilled
RF-B-19	361173.94	2472440.53		Ayres	361174.788	2472442.882	814.985	0.85	2.35	As-Drilled
RF-B-20	361202.18	2473174.61		Ayres	361195.573	2473174.925	818.288	-6.60	0.32	As-Drilled

Stakeout					Recorded					
Code	Northing	Easting	Type	Staked By	Northing	Easting	Elevation	Δ Northing	Δ Easting	Recorded Coordinates used
RF-B-21	361255.46	2473781.84		Ayres	361240.643	2473779.984	828.55	-14.82	-1.86	As-Drilled
RF-B-22	361400.57	2474241.14	Casing	Ayres	361397.765	2474257.4	834.885	-2.80	16.26	As-Drilled
RF-B-23	361391.62	2474420.00	Casing	Ayres	361385.539	2474415.943	837.116	-6.08	-4.06	As-Drilled
RF-B-24	361452.86	2474884.14	Pavement	Ayres	361452.627	2474884.163	833.4	-0.24	0.03	Stakeout
RF-B-25	361620.99	2475468.72		Ayres	361621.175	2475468.512	824.895	0.19	-0.21	As-Drilled
RF-B-26	361833.40	2476019.06	HDD	Ayres	361833.255	2476019.231	824.76	-0.14	0.17	Stakeout
RF-B-27	361953.75	2476339.27	HDD	Ayres	361953.655	2476339.492	825.719	-0.09	0.22	Stakeout
RF-B-28	362197.08	2476984.42		Ayres	362196.523	2476984.482	831.117	-0.56	0.06	As-Drilled
RF-B-29	362457.80	2477632.98		Ayres	362455.958	2477635.051	831.113	-1.85	2.07	As-Drilled
RF-B-30	362847.07	2478286.38		Ayres	362846.918	2478286.799	834.842	-0.15	0.42	As-Drilled
RF-B-30A	363060.423	2478517.034					833.683			AS-STAKED
RF-B-31	363176.37	2478680.66	Pavement	Ayres	363176.247	2478680.732	840.979	-0.13	0.07	As-Drilled
RF-B-31A	363301.088	2478756.759					838.24			AS-STAKED
RF-B-32	363670.45	2479031.48	HDD	Ayres	363671.871	2479028.55	842.887	1.42	-2.93	As-Drilled
RF-B-33	363944.40	2479179.64	HDD	Ayres	363937.845	2479188.357	844.115	-6.55	8.71	As-Drilled
RF-B-34	364559.39	2479445.09	Casing	Ayres	364559.414	2479445.17	852.897	0.03	0.08	Stakeout
RF-B-35	364507.40	2479610.38	Casing	Ayres	364507.568	2479609.952	855.216	0.16	-0.42	Stakeout

\\GESTRASERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-1	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 10/18/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 10/18/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 75 (International)		WisDOT STRUCTURE ID No		LONGITUDE		NORTHING 369356	
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Clean Water Plant		EASTING 2467272		SURFACE ELEVATION 798.8 ft	
FIELD LOG BY B. Moede		HAMMER TYPE Auto		EFFICIENCY 93%		STATION		OFFSET	
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha									

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	18	3 6 9 10	15			TOPSOIL (10")									
						0.8 (798)									
						LEAN CLAY WITH SAND, dark brown, moist, (FILL)								17	
2 SS	18	7 10 16	26											17	
					795	Sand seam at the bottom of sample SS-2									
3 SS	15	5 5 5	10		5									30	
						6.4 (792.4)									
						SAND WITH GRAVEL, brown, moist, medium dense	SP								
4 SS	13	6 6 10	16												
					790	8.8 (790)									
						GRAVEL WITH SAND, brown, moist to wet, medium dense to dense	GP								
5 SS	10	6 11 13	24		10										
6 SS	6	38 19 20	39												
					785	13.5 (785.3)									
						SILTY SAND WITH GRAVEL, brown, wet, medium dense to dense									
7 SS	12	15 16 18	34		15										
					780		SM								
8 SS	13	14 10 16	26		20										
						21 (777.8)									



End of Boring at 21.0 ft.



WATER & CAVE-IN OBSERVATION DATA






<input checked="" type="checkbox"/>	WATER ENCOUNTERED DURING DRILLING: 11ft.	<input checked="" type="checkbox"/>	CAVE DEPTH AT COMPLETION: 11ft.	WET <input type="checkbox"/>
<input checked="" type="checkbox"/>	WATER LEVEL AT COMPLETION: 11ft.	<input checked="" type="checkbox"/>	CAVE DEPTH AFTER 0 HOURS: NMR	DRY <input type="checkbox"/>
<input checked="" type="checkbox"/>	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>



NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

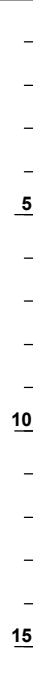


\\GESTRA\SERVER\MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19






PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-2	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 10/18/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 10/18/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 75 (International)		WisDOT STRUCTURE ID No		LONGITUDE		NORTHING 369772	
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Clean Water Plant		EASTING 2467834		SURFACE ELEVATION 806.1 ft	
FIELD LOG BY B. Moede		HAMMER TYPE Auto		EFFICIENCY 93%		STATION		OFFSET	
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha									



Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	18	3 5 8	13		805	TOPSOIL (5") 0.4 (805.7) WELL GRADED GRAVEL WITH SAND, dark brown to black, moist, with asphalt, (FILL)									Boring was staked behind building. Driller had to offset boring due to access. Boring was offset 40 feet south and 20 feet east from staked location. Fines = 5%
2 SS	18	12 13 16	29												
3 SS	16	3 3 3	6	5	800										
4 SS	18	10 14 20	34												
5 SS	10	5 15 20	35	10	795	SAND WITH GRAVEL, gray and brown, moist, dense 9.5 (796.6)									
6 SS	15	15 18 21	39				SP								
7 SS	14	18 21 28	49	15	790										
						18 (788.1)									
End of Boring at 18.0 ft.															Auger refusal. Driller noted possible cobbles/ boulders at 18' with hard drilling.

WATER & CAVE-IN OBSERVATION DATA															
	WATER ENCOUNTERED DURING DRILLING: NE						CAVE DEPTH AT COMPLETION: 13ft.					WET <input type="checkbox"/>			
	WATER LEVEL AT COMPLETION: NE						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>			
	WATER LEVEL AFTER 0 HOURS: NMR						NE = Not Encountered; NMR = No Measurement Recorded					WET <input type="checkbox"/>			
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.															

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-3	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/05/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No		DATE COMPLETED 9/05/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10		WISDOT STRUCTURE ID No		LONGITUDE		NORTHING 369235	
CREW CHIEF M. Rhodes		DRILLING RIG CME 45		ROADWAY NAME Sentry Dr.		EASTING 2468399		SURFACE ELEVATION 802.2 ft	
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 2 1/4" HSA		STATION		OFFSET		SURFACE ELEVATION	
LOG QC BY J. Bruesewitz		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		OFFSET	
COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	20	4 12 4 12	16		800	TOPSOIL (8") 0.7 (801.5) LEAN CLAY, dark gray, moist, with sand and gravel layers, (FILL)								19	
2 SS	12	4 4 5	9												
3 SS	14	6 19 28	47		5	5 (797.2) GRAVEL, brown, moist to wet, dense to very dense, trace to with sand Driller reports rig chatter from 5' to 16' possible cobbles	GP						15		
4 SS	18	22 29 27	56		795										
5 SS	18	20 24 21	45		10										
6 SS	12	25 48 50	98		790										
7 SS	15	17 27 50/3"	R		15										
End of Boring at 15.8 ft.															

WATER & CAVE-IN OBSERVATION DATA															
	WATER ENCOUNTERED DURING DRILLING: 12.5ft.						CAVE DEPTH AT COMPLETION: 5.3ft.					WET <input type="checkbox"/> DRY <input type="checkbox"/>			
	WATER LEVEL AT COMPLETION: NE						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/> DRY <input type="checkbox"/>			
	WATER LEVEL AFTER 0 HOURS: NMR					NE = Not Encountered; NMR = No Measurement Recorded									
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.															



PROJECT NAME Great Water Alliance				BORING LOG					BORING No		RF-B-3A	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 10/18/17		PAGE No				1 of 1		
CONSULTANT Greeley & Hansen		DRILLING CONTRACTOR PROJECT No 17016-10		DATE COMPLETED 10/18/17		HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29				
DRILLING CONTRACTOR GESTRA		DRILLING RIG Geoprobe		WisDOT STRUCTURE ID No		LATITUDE						
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 2 1/4" HSA		ROADWAY NAME Clean Water Plant		LONGITUDE						
FIELD LOG BY J. Krase		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		OFFSET		NORTHING 369710		
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION		EASTING 2468301
COUNTY 67-Waukesha		SURFACE ELEVATION								803.9 ft		

[illegible]






WATER & CAVE-IN OBSERVATION DATA

















NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

\\GESTRA-SERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19



PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-4	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/05/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/05/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 45		WISDOT STRUCTURE ID No		LONGITUDE		ROADWAY NAME Sentry Dr.	
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 2 1/4" HSA		STATION		OFFSET		NORTHING 368516	
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 96%		EASTING 2468404		SURFACE ELEVATION 798.9 ft	
LOG QC BY J. Bruesewitz		TOWNSHIP 67-Waukesha		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha									

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	12	4 6 8 6	14			TOPSOIL									
						0.5 (798.4)									
						LEAN CLAY, dark gray, moist, trace gravel, (FILL)									
2 SS	14	2 2 2	4			1.5 (797.4) / CLAYEY SAND WITH GRAVEL, very dark gray, moist, trace gravel, (FILL)								12	
					795										
3 SS	10	10 6 5	11	5		4.7 (794.2) SAND, brown, moist, medium dense, trace gravel	SP								
						6.2 (792.7) SAND WITH SILT, brown, moist to wet, medium dense, trace gravel									
4 SS	10	9 6 6	12		790		SP-SM								
5 SS	12	6 9 10	19	10											
						11.3 (787.6) GRAVEL WITH SAND, brown, wet, dense									
6 SS	12	7 16 18	34		785		GP								
7 SS	16	17 20 21	41	15		16 (782.9)									
End of Boring at 16.0 ft.															

WATER & CAVE-IN OBSERVATION DATA																	
	WATER ENCOUNTERED DURING DRILLING: 10ft.						CAVE DEPTH AT COMPLETION: 5ft.					WET <input type="checkbox"/>					
	WATER LEVEL AT COMPLETION: NE						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>					
	WATER LEVEL AFTER 0 HOURS: NMR					NE = Not Encountered; NMR = No Measurement Recorded										WET <input type="checkbox"/>	
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.																	

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-5																																																																																																																																																	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/05/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South																																																																																																																																																	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/05/17		LATITUDE		VERTICAL DATUM NGVD29																																																																																																																																																	
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 45		WISDOT STRUCTURE ID No		LONGITUDE																																																																																																																																																			
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 2 1/4" HSA		ROADWAY NAME Sentry Dr.		NORTHING 367737																																																																																																																																																			
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		EASTING 2468374																																																																																																																																																	
LOG QC BY J. Bruesewitz		TOWNSHIP 67-Waukesha		RANGE		SECTION		1/4 SECTION																																																																																																																																																	
COUNTY 67-Waukesha								SURFACE ELEVATION 802.9 ft																																																																																																																																																	
<table><thead><tr><th>Sample No / Type</th><th>Sample Recovery (in)</th><th>Blow Counts</th><th>N - Value</th><th>Depth (ft)</th><th>Elevation (ft)</th><th>Soil / Rock Description and Geological Origin for Each Major Unit / Comments</th><th>USCS / AASHTO</th><th>Graphic</th><th>Well Diagram</th><th>PID / FID</th><th>Unconfined Comp. Strength Q_u or (Q_u) (tsf)</th><th>Liquid Limit (%)</th><th>Plasticity Index (%)</th><th>Moisture Content (%)</th><th>Notes</th></tr></thead><tbody><tr><td>1 SS</td><td>6</td><td>3 2 2 2</td><td>4</td><td></td><td></td><td>TOPSOIL 0.5 (802.4) LEAN CLAY WITH GRAVEL, dark gray, moist, (FILL)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>2 SS</td><td>4</td><td>9 6 6</td><td>12</td><td>800</td><td></td><td>3.4 (799.5) LEAN CLAY WITH SAND, brown, moist, very stiff, trace gravel</td><td>CL</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3 SS</td><td>18</td><td>3 4 4</td><td>8</td><td>5</td><td></td><td>6.5 (796.4) SAND WITH SILT, brown, moist to wet, loose to medium dense</td><td>SP-SM</td><td></td><td></td><td></td><td>2.00</td><td>45</td><td>30</td><td>27</td><td>LOI = 4.1%</td></tr><tr><td>4 SS</td><td>18</td><td>3 3 4</td><td>7</td><td>795</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5 SS</td><td>18</td><td>3 3 4</td><td>7</td><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>6 SS</td><td>18</td><td>3 3 7</td><td>10</td><td>790</td><td></td><td>Trace gravel in SS-6 and SS-7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>7 SS</td><td>18</td><td>4 4 8</td><td>12</td><td>15</td><td></td><td>16 (786.9)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td colspan="16">End of Boring at 16.0 ft.</td></tr></tbody></table>										Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes	1 SS	6	3 2 2 2	4			TOPSOIL 0.5 (802.4) LEAN CLAY WITH GRAVEL, dark gray, moist, (FILL)										2 SS	4	9 6 6	12	800		3.4 (799.5) LEAN CLAY WITH SAND, brown, moist, very stiff, trace gravel	CL									3 SS	18	3 4 4	8	5		6.5 (796.4) SAND WITH SILT, brown, moist to wet, loose to medium dense	SP-SM				2.00	45	30	27	LOI = 4.1%	4 SS	18	3 3 4	7	795												5 SS	18	3 3 4	7	10												6 SS	18	3 3 7	10	790		Trace gravel in SS-6 and SS-7										7 SS	18	4 4 8	12	15		16 (786.9)										End of Boring at 16.0 ft.															
Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes																																																																																																																																										
1 SS	6	3 2 2 2	4			TOPSOIL 0.5 (802.4) LEAN CLAY WITH GRAVEL, dark gray, moist, (FILL)																																																																																																																																																			
2 SS	4	9 6 6	12	800		3.4 (799.5) LEAN CLAY WITH SAND, brown, moist, very stiff, trace gravel	CL																																																																																																																																																		
3 SS	18	3 4 4	8	5		6.5 (796.4) SAND WITH SILT, brown, moist to wet, loose to medium dense	SP-SM				2.00	45	30	27	LOI = 4.1%																																																																																																																																										
4 SS	18	3 3 4	7	795																																																																																																																																																					
5 SS	18	3 3 4	7	10																																																																																																																																																					
6 SS	18	3 3 7	10	790		Trace gravel in SS-6 and SS-7																																																																																																																																																			
7 SS	18	4 4 8	12	15		16 (786.9)																																																																																																																																																			
End of Boring at 16.0 ft.																																																																																																																																																									
WATER & CAVE-IN OBSERVATION DATA																																																																																																																																																									
	WATER ENCOUNTERED DURING DRILLING: 12.5ft.						CAVE DEPTH AT COMPLETION: 7.6ft.					WET <input type="checkbox"/>																																																																																																																																													
	WATER LEVEL AT COMPLETION: NE						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>																																																																																																																																													
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NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.																																																																																																																																																									

\\GESTRA-SERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-6	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/06/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/06/17		LATITUDE		VERTICAL DATUM NGVD29	
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 45		WISDOT STRUCTURE ID No		LONGITUDE			
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Sentry Dr.		NORTHING 366794			
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		EASTING 2468242	
LOG QC BY J. Bruesewitz		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha								SURFACE ELEVATION 807.9 ft	



Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _p or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	16	4 5 5	10			CONCRETE (6") 0.5 (807.4)									
2 SS	18	5 6 7	13		805	BASE COURSE (5") 0.9 (807)									
						SAND WITH SILT, brown, moist, medium dense, some clay seams	SP-SM								
3 SS	18	5 5 5	10	5											
						LEAN CLAY WITH SAND, brown to grayish brown, moist, stiff, trace gravel	CL								
4 SS	18	2 2 2	4		800										
						CLAYEY SAND, light brown, wet, very loose, trace gravel	SC				1.00			19	
5 SS	12	2 1 1	2	10											
						SILT, gray, wet, medium dense	ML								
6 SS	18	5 5 6	11		795										
7 SS	18	5 6 7	13	15											
						16 (791.9)									

End of Boring at 16.0 ft.

End of Boring at 16.0 ft.



\\GESTRA-SERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

\\GESTRASERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-6A	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/06/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/06/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 45		WISDOT STRUCTURE ID No		LONGITUDE		LATITUDE	
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Sentry Dr.		NORTHING 366984		EASTING 2468245	
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		OFFSET	
LOG QC BY J. Bruesewitz		TOWNSHIP 67-Waukesha		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha		SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 806.6 ft	

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	1	10 31 15 18	46		805	TOPSOIL									
						1 (805.6)									
2 SS	18	5 8 4	12			SAND WITH SILT, brown, moist, trace gravel, (FILL)									Pushed stone during sampling SS-1
3 SS	8	3 3 3	6	5		2" silt seam noted at 5.5'									
					800	6.1 (800.5)									
4 SS	12	1 1 1	2			SAND WITH SILT, brown, moist, very loose, trace gravel	SP-SM								
						8.8 (797.8)									
5 SS	12	1 1 3	4	10		CLAYEY SAND, dark gray, moist, loose, with organics	SC								
					795	11.3 (795.3)									Fines = 13%
6 SS	16	6 7 7	14			SILT, gray, very moist to wet, very loose to medium dense									
7 SS	18	3 3 6	9	15			ML								
					790										
8 SS	18	3 2 1	3	20		20.7 (785.9)									
						21 (785.6)	CL				0.50			17	
End of Boring at 21.0 ft.															






WATER & CAVE-IN OBSERVATION DATA															
☒	WATER ENCOUNTERED DURING DRILLING: 8.3ft.					☒	CAVE DEPTH AT COMPLETION: 7.6ft.					WET <input type="checkbox"/>			
☒	WATER LEVEL AT COMPLETION: NE					☒	CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>			
☒	WATER LEVEL AFTER 0 HOURS: NMR						NE = Not Encountered; NMR = No Measurement Recorded					WET <input type="checkbox"/>			
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.															



PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-7	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/06/17		PAGE No 1 of 1			
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No		DATE STARTED 9/06/17		HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29	
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10		DATE COMPLETED 9/06/17		LATITUDE			
CREW CHIEF M. Rhodes		DRILLING RIG CME 45		WisDOT STRUCTURE ID No		LONGITUDE			
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Sentry Dr.		NORTHING 366062			
LOG QC BY J. Bruesewitz		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		OFFSET	
COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
								SURFACE ELEVATION 811.6 ft	

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	20	3 4 3 3	7		810	TOPSOIL (7")									
						0.6 (811)	SC								
2 SS	16	2 2 3	5			CLAYEY SAND, brown, moist, loose, trace gravel, and organics	CL				1.50			8	
						1.7 (809.9)								20	
						LEAN CLAY WITH SAND, dark brown, moist, stiff	SP-SC								
						3 (808.6)									
3 SS	14	2 1 1	2	5		SAND WITH CLAY, brown, moist, loose									
						3.9 (807.7)									
					805	POORLY GRADED SAND WITH SILT, brown to dark brown, moist to wet, very loose to medium dense									Fines = 7%
4 SS	18	4 7 9	16				SP-SM								
5 SS	18	4 6 5	11	10											
					800										
6 SS	18	6 9 12	21			SAND WITH SILT, brown, wet, medium dense									
						11.5 (800.1)	SP-SM								
7 SS	18	4 6 11	17	15											
						16 (795.6)									

End of Boring at 16.0 ft.






\\GESTRA-SERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

WATER & CAVE-IN OBSERVATION DATA				
	WATER ENCOUNTERED DURING DRILLING:	11ft.		CAVE DEPTH AT COMPLETION:
	WATER LEVEL AT COMPLETION:	NE		CAVE DEPTH AFTER 0 HOURS:
	WATER LEVEL AFTER 0 HOURS:	NMR		NE = Not Encountered; NMR = No Measurement Recorded
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.				



PROJECT NAME Great Water Alliance				BORING LOG					BORING No		RF-B-8	
PROJECT ID No 00521741									PAGE No 1 of 1			
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No			DATE STARTED 9/05/17			HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29		
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10			DATE COMPLETED 9/05/17			LATITUDE				
CREW CHIEF M. Rhodes		DRILLING RIG CME 45			WisDOT STRUCTURE ID No			LONGITUDE				
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 2 1/4" HSA			ROADWAY NAME Sentry Dr.			NORTHING 365337				
LOG QC BY J. Bruesewitz		HAMMER TYPE Auto	EFFICIENCY 96%		STATION		OFFSET		EASTING 2468248			
COUNTY 67-Waukesha		TOWNSHIP	RANGE	SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 815.2 ft		

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q_u or (Q_c) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	20	5966	15		TOPSOIL (5") SAND WITH SILT, brown, moist, with clay seams, (FILL)	0.4 (814.8)								
2 SS	12	224	6		LEAN CLAY WITH SAND, dark brown, moist, possible buried topsoil	1.8 (813.4)								
						CL							21	
3 SS	18	678	15	5 810							26	10	15	LOI = 2.7%
					SAND WITH SILT, brown, moist to wet, loose to medium dense	6.5 (808.7)								
4 SS	18	246	10											
5 SS	18	433	6	10 805										
						SP-SM								
6 SS	16	722	4											
7 SS	18	333	6	15 800										
						16 (799.2)								

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 12.8ft.		CAVE DEPTH AT COMPLETION: 6.8ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: NMR	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG					BORING No		RF-B-9	
PROJECT ID No 00521741									PAGE No 1 of 1			
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No			DATE STARTED 9/08/17			HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29		
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10			DATE COMPLETED 9/08/17			LATITUDE				
CREW CHIEF M. Rhodes		DRILLING RIG CME 45			WisDOT STRUCTURE ID No			LONGITUDE				
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 3 3/4 HSA			ROADWAY NAME W. Sunset Dr.			NORTHING 365062				
LOG QC BY J. Bruesewitz		HAMMER TYPE Auto	EFFICIENCY 96%		STATION		OFFSET		EASTING 2468730			
COUNTY 67-Waukesha		TOWNSHIP	RANGE	SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 822.3 ft		



[illegible]

End of Boring at 6.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: NE		CAVE DEPTH AT COMPLETION: NMR	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: NMR	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>



NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.









PROJECT NAME Great Water Alliance				BORING LOG					BORING No		RF-B-9A	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/13/17		PAGE No				1 of 1		
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No		DATE COMPLETED 9/13/17		HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29				
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10		DATE COMPLETED 9/13/17		LATITUDE						
CREW CHIEF M. Rhodes		DRILLING RIG CME 45		WisDOT STRUCTURE ID No		LONGITUDE						
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 3 3/4 HSA		ROADWAY NAME W. Sunset Dr.		NORTHING				365062		
LOG QC BY E. Jeske		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		OFFSET		EASTING 2468730		
COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION		
										SURFACE ELEVATION 822.3 ft		






Sample No. / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
				820	Boring B-9A was drilled 40 feet east of B-9 due to boring B-9 hitting an obstruction at 7'. Boring B-9A was blind drilled to 7'.									Boring RF-B-9A was drilled adjacent to RF-B-9. Minimal elevation difference between RF-B-9 and RF-B-9A. Coordinates and Elevation shown on log are from RF-B-9.
1 SS	18	5 7 9	16	815	7 (815.3) POORLY GRADED SAND WITH SILT, brown, moist, loose to medium dense									
2 SS	16	2 2 3	5	10		SP-SM								Fines = 9%
3 SS	18	8 7 7	14	810	Trace fine gravel from 12' to 13'									
4 SS	18	5 5 5	10	15	14 (808.3) SILTY SAND, brown, wet, medium dense	SM								
				805	17.8 (804.5) SILT, gray, very moist to wet, medium dense									
5 SS	18	6 6 4	10	20	21 (801.3)	ML							22	

WATER & CAVE-IN OBSERVATION DATA



\\GESTRASERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-10	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/07/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/07/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 45		WISDOT STRUCTURE ID No		LONGITUDE		ROADWAY NAME W. Sunset Dr.	
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		STATION		OFFSET		NORTHING 365078	
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 96%		EASTING 2469646		SURFACE ELEVATION 830.8 ft	
LOG QC BY J. Bruesewitz		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha									

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
				830		CONCRETE (9")									
						BASE COURSE (10")									
						Boring very close to utility duct, upper 6" of boring hydro-vac									
				5											
				825		SAND WITH SILT, brown, moist, medium dense									
1 SS	10	8 5 6	11				SP-SM								
				10											
2 SS	12	6 6 6	12												
				820											
						SILT WITH SAND, brown, moist to wet, medium dense									
3 SS	14	6 7 10	17				ML								
				15											
4 SS	18	6 6 6	12												
				815											
						16 (814.8)									
End of Boring at 16.0 ft.															

WATER & CAVE-IN OBSERVATION DATA															
	WATER ENCOUNTERED DURING DRILLING: 12ft.						CAVE DEPTH AT COMPLETION: 7ft.					WET <input type="checkbox"/>			
	WATER LEVEL AT COMPLETION: NE						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>			
	WATER LEVEL AFTER 0 HOURS: NMR						NE = Not Encountered; NMR = No Measurement Recorded					WET <input type="checkbox"/>			
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.															

\\GESTRA-SERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-11	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/07/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/07/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 45		WISDOT STRUCTURE ID No		LONGITUDE		NORTHING 365096	
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME W. Sunset Dr.		EASTING 2470378		SURFACE ELEVATION 834.8 ft	
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		OFFSET	
LOG QC BY J. Bruesewitz		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha									



Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q_u or (Q_u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	16	2 2 6 9	8			TOPSOIL 0.5 (834.3)									
2 SS	8	6 8 10	18			LEAN CLAY WITH SAND, brown, moist, with construction debris, (FILL) 2.3 (832.5)								20	
3 SS	14	8 10 14	24	5	830	POORLY GRADED GRAVEL WITH SILT AND SAND, brown, moist, medium dense, trace to with gravel	GP-GM								Fines = 6%
4 SS	16	6 7 9	16			SAND, light brown, moist, medium dense, trace to with gravel 6.3 (828.5)									
5 SS	18	7 9 11	20	10	825		SP								
6 SS	18	4 5 6	11												
7 SS	16	4 5 7	12	15	820										
						16 (818.8)									

End of Boring at 16.0 ft.



WATER & CAVE-IN OBSERVATION DATA

<input checked="" type="checkbox"/>	WATER ENCOUNTERED DURING DRILLING: NE	<input checked="" type="checkbox"/>	CAVE DEPTH AT COMPLETION: 4.2ft.	WET <input type="checkbox"/> DRY <input type="checkbox"/>
<input checked="" type="checkbox"/>	WATER LEVEL AT COMPLETION: NE	<input checked="" type="checkbox"/>	CAVE DEPTH AFTER 0 HOURS: NMR	WET <input type="checkbox"/> DRY <input type="checkbox"/>
<input checked="" type="checkbox"/>	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-12																																																																																																																																																																																																																																																																	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/07/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South																																																																																																																																																																																																																																																																	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/07/17		LATITUDE		VERTICAL DATUM NGVD29																																																																																																																																																																																																																																																																	
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CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME W. Sunset Dr.		NORTHING 365118																																																																																																																																																																																																																																																																			
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		EASTING 2471218																																																																																																																																																																																																																																																																	
LOG QC BY J. Bruesewitz		COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION																																																																																																																																																																																																																																																																	
				1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 844 ft																																																																																																																																																																																																																																																																	
<table><thead><tr><th>Sample No / Type</th><th>Sample Recovery (in)</th><th>Blow Counts</th><th>N - Value</th><th>Depth (ft)</th><th>Elevation (ft)</th><th>Soil / Rock Description and Geological Origin for Each Major Unit / Comments</th><th>USCS / AASHTO</th><th>Graphic</th><th>Well Diagram</th><th>PID / FID</th><th>Unconfined Comp. Strength Q_p or (Q_u) (tsf)</th><th>Liquid Limit (%)</th><th>Plasticity Index (%)</th><th>Moisture Content (%)</th><th>Notes</th></tr></thead><tbody><tr><td>1 SS</td><td>18</td><td>6 10 10 6</td><td>20</td><td></td><td></td><td>TOPSOIL (3") 0.3 (843.7)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>2 SS</td><td>8</td><td>3 3 5</td><td>8</td><td></td><td></td><td>SAND WITH SILT AND GRAVEL, brown, moist, (FILL) 2.3 (841.7)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td>840</td><td>LEAN CLAY, black, moist, stiff, possible buried topsoil</td><td>CL</td><td></td><td></td><td></td><td></td><td></td><td></td><td>24</td><td>LOI=7%</td></tr><tr><td>3 SS</td><td>6</td><td>3 2 6</td><td>8</td><td></td><td>5</td><td>SAND WITH GRAVEL, brown, moist, loose, with lean clay pockets 4.8 (839.2)</td><td>SP</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>4 SS</td><td>10</td><td>12 16 18</td><td>34</td><td></td><td></td><td>GRAVEL WITH SAND, brown, moist, medium dense to dense 6 (838)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td>835</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>5 SS</td><td>14</td><td>16 18 18</td><td>36</td><td></td><td>10</td><td></td><td>GP</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>6 SS</td><td>4</td><td>10 13 13</td><td>26</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td>830</td><td>SANDY LEAN CLAY WITH GRAVEL, light brown, moist, hard 13.4 (830.6)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>7 SS</td><td>12</td><td>5 10 22</td><td>32</td><td></td><td>15</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>8</td><td>Sample disturbed; unable to obtain Q_p</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>CL</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td>825</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>8 SS</td><td>10</td><td>36 50/5"</td><td>R</td><td></td><td>20</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td>20.4 (823.6)</td><td></td><td></td><td></td><td></td><td>4.50+</td><td></td><td></td><td></td><td></td></tr><tr><td colspan="16">End of Boring at 20.4 ft.</td></tr></tbody></table>										Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _p or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes	1 SS	18	6 10 10 6	20			TOPSOIL (3") 0.3 (843.7)										2 SS	8	3 3 5	8			SAND WITH SILT AND GRAVEL, brown, moist, (FILL) 2.3 (841.7)															840	LEAN CLAY, black, moist, stiff, possible buried topsoil	CL							24	LOI=7%	3 SS	6	3 2 6	8		5	SAND WITH GRAVEL, brown, moist, loose, with lean clay pockets 4.8 (839.2)	SP									4 SS	10	12 16 18	34			GRAVEL WITH SAND, brown, moist, medium dense to dense 6 (838)															835											5 SS	14	16 18 18	36		10		GP									6 SS	4	10 13 13	26																		830	SANDY LEAN CLAY WITH GRAVEL, light brown, moist, hard 13.4 (830.6)										7 SS	12	5 10 22	32		15									8	Sample disturbed; unable to obtain Q _p								CL														825											8 SS	10	36 50/5"	R		20																	20.4 (823.6)					4.50+					End of Boring at 20.4 ft.															
Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _p or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes																																																																																																																																																																																																																																																										
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						20.4 (823.6)					4.50+																																																																																																																																																																																																																																																														
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WATER & CAVE-IN OBSERVATION DATA																																																																																																																																																																																																																																																																									
<table><tr><td>WATER ENCOUNTERED DURING DRILLING:</td><td>NE</td><td>CAVE DEPTH AT COMPLETION:</td><td>6ft.</td><td>WET</td><td><input type="checkbox"/></td></tr><tr><td>WATER LEVEL AT COMPLETION:</td><td>NE</td><td>CAVE DEPTH AFTER 0 HOURS:</td><td>NMR</td><td>WET</td><td><input type="checkbox"/></td></tr><tr><td>WATER LEVEL AFTER 0 HOURS:</td><td>NMR</td><td colspan="4">NE = Not Encountered; NMR = No Measurement Recorded</td></tr></table>																WATER ENCOUNTERED DURING DRILLING:	NE	CAVE DEPTH AT COMPLETION:	6ft.	WET	<input type="checkbox"/>	WATER LEVEL AT COMPLETION:	NE	CAVE DEPTH AFTER 0 HOURS:	NMR	WET	<input type="checkbox"/>	WATER LEVEL AFTER 0 HOURS:	NMR	NE = Not Encountered; NMR = No Measurement Recorded																																																																																																																																																																																																																																											
WATER ENCOUNTERED DURING DRILLING:	NE	CAVE DEPTH AT COMPLETION:	6ft.	WET	<input type="checkbox"/>																																																																																																																																																																																																																																																																				
WATER LEVEL AT COMPLETION:	NE	CAVE DEPTH AFTER 0 HOURS:	NMR	WET	<input type="checkbox"/>																																																																																																																																																																																																																																																																				
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NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.																																																																																																																																																																																																																																																																									



\\GESTRA\SERVER\MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG					BORING No		RF-B-13	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/11/17		PAGE No				1 of 1		
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No		DATE COMPLETED 9/11/17		HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29				
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10		DATE COMPLETED 9/11/17		LATITUDE						
CREW CHIEF M. Rhodes		DRILLING RIG CME 45		WisDOT STRUCTURE ID No		LONGITUDE						
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 3 3/4 HSA		ROADWAY NAME S. West Ave		NORTHING				364557		
LOG QC BY E. Jeske		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		OFFSET		EASTING 2471646		
COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION		
										SURFACE ELEVATION 853.1 ft		






Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q_u or (Q_{ult}) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	4	3 4 3 4	7		TOPSOIL (12") 1 (852.1)									
2 SS	18	3 4 8	12	850	SILTY SAND WITH GRAVEL, brown, moist, loose to medium dense	SM								
3 SS	6	5 5 7	12	5	6 (847.1)									
4 SS	18	4 5 8	13	845	SANDY SILTY CLAY, brown, moist, stiff to hard	CL-ML				1.00	15	4		
5 SS	18	10 17 24	41	10						4.50				
6 SS	18	17 25 45	70	840	12.3 (840.8) SILTY SAND, brown, very moist to wet, very dense	SM								
7 SS	18	14 16 40	56	15	14 (839.1) SANDY LEAN CLAY WITH GRAVEL, brown, moist, hard 16 (837.1)	CL				4.50				

WATER & CAVE-IN OBSERVATION DATA

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-14	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/12/17		HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/12/17		LATITUDE		LONGITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG Geoprobe		WISDOT STRUCTURE ID No		NORTHING 363935		EASTING 2471639	
CREW CHIEF M. Panfil		DRILLING METHOD / HOLE SIZE Casing		ROADWAY NAME S. West Ave		SURFACE ELEVATION 846.8 ft			
FIELD LOG BY B. Moede		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		OFFSET	
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha									

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	18	299	18		845	TOPSOIL (6") 0.5 (846.3)									
						SILTY SAND WITH GRAVEL, brown, moist, (FILL) 1.8 (845)									
2 SS	17	255	10			SANDY LEAN CLAY, brown, moist, (FILL)									
						LEAN CLAY, brown, moist, stiff to very stiff 3.9 (842.9)								17	
3 SS	17	334	7	5							1.25			17	
					840	with gray mottles in sample SS-4	CL								
4 SS	16	556	11								2.00			10	
						SANDY SILT, brown, very moist, loose to medium dense 8.9 (837.9)								10	
5 SS	10	944	8	10			ML								
					835									10	
6 SS	12	146	10												
						LEAN CLAY WITH GRAVEL, brown, moist, hard 13.8 (833)									
7 SS	2	50/5"	R			14.9 (831.9)	CL							7	
End of Boring at 14.9 ft.															

















WATER & CAVE-IN OBSERVATION DATA																	
	WATER ENCOUNTERED DURING DRILLING: NE						CAVE DEPTH AT COMPLETION: 14ft.					WET <input type="checkbox"/>					
	WATER LEVEL AT COMPLETION: NE						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>					
	WATER LEVEL AFTER 0 HOURS: NMR					NE = Not Encountered; NMR = No Measurement Recorded										WET <input type="checkbox"/>	
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.																	

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 WATER ENCOUNTERED DURING DRILLING: 8ft.	 CAVE DEPTH AT COMPLETION: 9ft.	WET	<input type="checkbox"/>		
		 WATER LEVEL AT COMPLETION: 8ft.	 CAVE DEPTH AFTER 0 HOURS: NMR	WET	<input type="checkbox"/>
		 WATER LEVEL AFTER 0 HOURS: NMR	NE = Not Encountered; NMR = No Measurement Recorded	WET	<input type="checkbox"/>
				WET	<input type="checkbox"/>
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.					

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-16																																																																																																																						
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/08/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South																																																																																																																						
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/08/17		VERTICAL DATUM NGVD29		LATITUDE																																																																																																																						
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 45		WisDOT STRUCTURE ID No		LONGITUDE		NORTHING 362447																																																																																																																						
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME S. West Ave		EASTING 2472051		SURFACE ELEVATION 818 ft																																																																																																																						
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		OFFSET																																																																																																																						
LOG QC BY J. Bruesewitz		TOWNSHIP		RANGE		SECTION		1/4 SECTION																																																																																																																						
COUNTY 67-Waukesha		SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 818 ft																																																																																																																						
<table><thead><tr><th>Sample No / Type</th><th>Sample Recovery (in)</th><th>Blow Counts</th><th>N - Value</th><th>Depth (ft)</th><th>Elevation (ft)</th><th>Soil / Rock Description and Geological Origin for Each Major Unit / Comments</th><th>USCS / AASHTO</th><th>Graphic</th><th>Well Diagram</th><th>PID / FID</th><th>Unconfined Comp. Strength Q_u or (Q_u) (tsf)</th><th>Liquid Limit (%)</th><th>Plasticity Index (%)</th><th>Moisture Content (%)</th><th>Notes</th></tr></thead><tbody><tr><td>1 SS</td><td>20</td><td>10 20 27</td><td>47</td><td rowspan="2">5</td><td rowspan="2">815</td><td>CONCRETE (6") GRAVEL WITH SAND, gray, moist, (recycled concrete), (FILL)</td><td></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td></tr><tr><td>2 SS</td><td>12</td><td>12 17 10</td><td>27</td><td>0.5 (817.5)</td><td></td></tr><tr><td>3 SS</td><td>16</td><td>17 10 3</td><td>13</td><td rowspan="2">10</td><td rowspan="2">810</td><td>LEAN CLAY WITH SAND, dark gray, moist, stiff, trace organics</td><td>CL</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2">1.00</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2">12</td><td rowspan="2"></td></tr><tr><td>4 SS</td><td>10</td><td>2 3 3</td><td>6</td><td>5.3 (812.7)</td><td>SAND WITH SILT, gray, wet, loose</td><td>SP-SM</td><td>6.4 (811.6)</td><td></td></tr><tr><td>5 SS</td><td>18</td><td>2 2 3</td><td>5</td><td rowspan="2">15</td><td rowspan="2">805</td><td>SAND WITH SILT, grayish brown, wet, loose to medium dense, trace gravel</td><td>SP-SM</td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2"></td><td rowspan="2">Driller added 10 gallons of water to hole to prevent heave</td></tr><tr><td>6 SS</td><td>12</td><td>2 3 5</td><td>8</td><td>8.7 (809.3)</td><td></td></tr><tr><td>7 SS</td><td>18</td><td>4 5 8</td><td>13</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td colspan="16">End of Boring at 16.0 ft.</td></tr></tbody></table>										Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes	1 SS	20	10 20 27	47	5	815	CONCRETE (6") GRAVEL WITH SAND, gray, moist, (recycled concrete), (FILL)										2 SS	12	12 17 10	27	0.5 (817.5)		3 SS	16	17 10 3	13	10	810	LEAN CLAY WITH SAND, dark gray, moist, stiff, trace organics	CL				1.00			12		4 SS	10	2 3 3	6	5.3 (812.7)	SAND WITH SILT, gray, wet, loose	SP-SM	6.4 (811.6)		5 SS	18	2 2 3	5	15	805	SAND WITH SILT, grayish brown, wet, loose to medium dense, trace gravel	SP-SM								Driller added 10 gallons of water to hole to prevent heave	6 SS	12	2 3 5	8	8.7 (809.3)		7 SS	18	4 5 8	13													End of Boring at 16.0 ft.															
Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes																																																																																																															
1 SS	20	10 20 27	47	5	815	CONCRETE (6") GRAVEL WITH SAND, gray, moist, (recycled concrete), (FILL)																																																																																																																								
2 SS	12	12 17 10	27			0.5 (817.5)																																																																																																																								
3 SS	16	17 10 3	13	10	810	LEAN CLAY WITH SAND, dark gray, moist, stiff, trace organics	CL				1.00			12																																																																																																																
4 SS	10	2 3 3	6			5.3 (812.7)	SAND WITH SILT, gray, wet, loose									SP-SM	6.4 (811.6)																																																																																																													
5 SS	18	2 2 3	5	15	805	SAND WITH SILT, grayish brown, wet, loose to medium dense, trace gravel	SP-SM								Driller added 10 gallons of water to hole to prevent heave																																																																																																															
6 SS	12	2 3 5	8			8.7 (809.3)																																																																																																																								
7 SS	18	4 5 8	13																																																																																																																											
End of Boring at 16.0 ft.																																																																																																																														
WATER & CAVE-IN OBSERVATION DATA																																																																																																																														
	WATER ENCOUNTERED DURING DRILLING: 7.5ft.						CAVE DEPTH AT COMPLETION: 5.3ft.					WET <input type="checkbox"/>																																																																																																																		
	WATER LEVEL AT COMPLETION: NMR						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>																																																																																																																		
	WATER LEVEL AFTER 0 HOURS: NMR					NE = Not Encountered; NMR = No Measurement Recorded										WET <input type="checkbox"/>																																																																																																														
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.																																																																																																																														

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End of Boring at 16.0 ft.



	WATER ENCOUNTERED DURING DRILLING: 4ft.		CAVE DEPTH AT COMPLETION: 1.3ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NMR		CAVE DEPTH AFTER 0 HOURS: NMR	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	DRY <input type="checkbox"/>

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

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	WATER ENCOUNTERED DURING DRILLING: 2.8ft.		CAVE DEPTH AT COMPLETION: 9.5ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: 6.4ft.		CAVE DEPTH AFTER 0 HOURS: NMR	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	DRY <input type="checkbox"/>






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG					BORING No		RF-B-19	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/13/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29		
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/13/17		LATITUDE		LONGITUDE		NORTHING 361175		
DRILLING CONTRACTOR GESTRA		DRILLING RIG Geoprobe		WiSDOT STRUCTURE ID No		EASTING 2472443		SURFACE ELEVATION 815 ft				
CREW CHIEF M. Panfil		DRILLING METHOD / HOLE SIZE Casing		ROADWAY NAME Les Paul Pkwy		LOG QC BY J. Bruesewitz		COUNTY 67-Waukesha				
LOG QC BY J. Bruesewitz		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		OFFSET				
COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION		

[illegible]








End of Boring at 21.0 ft.

WATER & CAVE-IN OBSERVATION DATA



	WATER ENCOUNTERED DURING DRILLING: 8ft.		CAVE DEPTH AT COMPLETION: NMR	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: 18ft.		CAVE DEPTH AFTER 0 HOURS: NMR	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	DRY <input type="checkbox"/>

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

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PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-20								
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/13/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South								
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/13/17		VERTICAL DATUM NGVD29		LATITUDE								
DRILLING CONTRACTOR GESTRA		DRILLING RIG Geoprobe		WISDOT STRUCTURE ID No		LONGITUDE		LATITUDE								
CREW CHIEF M. Panfil		DRILLING METHOD / HOLE SIZE Casing		ROADWAY NAME Les Paul Pkwy		NORTHING 361196		EASTING 2473175								
FIELD LOG BY B. Moede		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		OFFSET								
LOG QC BY J. Bruesewitz		COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION								
				1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 818.3 ft								
Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q_u or (Q_u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes	
1 SS	15	3 5 5 11	10			TOPSOIL (6") 0.5 (817.8)										
2 SS	13	9 9 10	19		815	CLAYEY SAND WITH GRAVEL, light brown, moist, medium dense, (FILL) 1.6 (816.7)										
						SAND WITH SILT AND GRAVEL, brown, moist, medium dense, (FILL)										
3 SS	0			5		LEAN CLAY, grayish brown, moist, stiff 5 (813.3)										
4 SS	15	3 2 4	6		810						1.00	41	24	29		
5 SS	18	5 5 5	10	10			CL				1.75			25		
6 SS	18	2 3 3	6		805						1.25			25		
7 SS	15	1 1 3	4	15		LEAN CLAY, gray, moist, very soft to stiff 14 (804.3)					<0.25 - 1.00					
							CL									
8 SS	17	4 5 7	12	20	800	SAND WITH SILT AND GRAVEL, gray, wet, medium dense 17.6 (800.7)										
							SP-SM									
						21 (797.3)										
End of Boring at 21.0 ft.																
WATER & CAVE-IN OBSERVATION DATA																
	WATER ENCOUNTERED DURING DRILLING: 19ft.						CAVE DEPTH AT COMPLETION: NMR					WET <input type="checkbox"/> DRY <input type="checkbox"/>				
	WATER LEVEL AT COMPLETION: NMR						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/> DRY <input type="checkbox"/>				
	WATER LEVEL AFTER 0 HOURS: NMR					NE = Not Encountered; NMR = No Measurement Recorded										
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.																



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PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-21	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/13/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/13/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG Geoprobe		WISDOT STRUCTURE ID No		LONGITUDE		NORTHING 361241	
CREW CHIEF M. Panfil		DRILLING METHOD / HOLE SIZE Casing		ROADWAY NAME Les Paul Pkwy		EASTING 2473780		SURFACE ELEVATION 828.6 ft	
FIELD LOG BY B. Moede		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		OFFSET	
LOG QC BY J. Bruesewitz		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha									

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	10	1376	10			TOPSOIL (6")									
						CLAYEY SAND, brown, moist, (FILL)									
2 SS	8	1136	9		825										
						LEAN CLAY WITH SAND, brown, moist, (FILL)									
3 SS	6	438	11	5											
						CLAYEY SAND WITH GRAVEL, brown and gray, moist, (FILL)									
4 SS	13	51124	35		820										
						SAND WITH SILT AND GRAVEL, brown, moist, (FILL)									
5 SS	15	7511	16	10											
						ELASTIC SILT, dark gray, moist to wet, very loose to medium dense, trace shells									
6 SS	17	233	6		815						0.50			48	
7 SS	15	443	7	15							0.75			50	
					810		MH								
8 SS	18	557	12	20							<0.25			46	LOI = 2.3%
					805										
9 SS	18	113	4	25										14	
						SAND WITH SILT, gray, wet, very loose	SP-SM								
End of Boring at 26.0 ft.															

WATER & CAVE-IN OBSERVATION DATA					
▼	WATER ENCOUNTERED DURING DRILLING: 16ft.		☒	CAVE DEPTH AT COMPLETION: 14ft.	
▼	WATER LEVEL AT COMPLETION: 19ft.		☒	CAVE DEPTH AFTER 0 HOURS: NMR	
▼	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded		
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.					






WET
DRY
WET
DRY

PROJECT NAME Great Water Alliance				BORING LOG					BORING No		RF-B-22	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/13/17		PAGE No				1 of 1		
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No		DATE COMPLETED 9/13/17		HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29				
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10		LATITUDE								
CREW CHIEF M. Panfil		DRILLING RIG Geoprobe		WisDOT STRUCTURE ID No		LONGITUDE						
FIELD LOG BY B. Moede		DRILLING METHOD / HOLE SIZE Casing		ROADWAY NAME Les Paul Pkwy		NORTHING 361398						
LOG QC BY J. Bruesewitz		HAMMER TYPE Auto	EFFICIENCY 90%	STATION		OFFSET		EASTING 2474257				
COUNTY 67-Waukesha		TOWNSHIP	RANGE	SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 834.9 ft		

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q_u or (Q_c) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	7	1887	16		TOPSOIL (7") 0.6 (834.3) SILTY CLAY, black, moist, (FILL)									
2 SS	7	3511	16		3.5 (831.4) CLAYEY SAND WITH GRAVEL, light brown, very moist, (FILL)									
3 SS	2	050/5"	R	5 830	5.8 (829.1) SILTY SAND WITH GRAVEL, light brown, moist to wet, (FILL)									
4 SS	13	161516	31											
5 SS	15	181628	44	10 825	11.4 (823.5) SILTY SAND WITH GRAVEL, light brown, moist to wet, loose	SM								
6 SS	10	1153	8		13.7 (821.2) CLAYEY SAND, light brown to light gray, wet, very loose to loose, trace gravel	SC								
7 SS	10	000	0	15 820										
8 SS	3	133	6	20 815	21 (813.9)									



End of Boring at 21.0 ft.









WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 6ft.		CAVE DEPTH AT COMPLETION: 14ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: NMR	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	DRY <input type="checkbox"/>

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.






\\GESTRA\SERVER\MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-23	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/12/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/12/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 45		WisDOT STRUCTURE ID No		LONGITUDE		LATITUDE	
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Les Paul Pkwy		NORTHING 361386		LONGITUDE	
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		EASTING 2474416	
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
SURFACE ELEVATION 837.1 ft		TOWNSHIP		RANGE		SECTION		1/4 SECTION	



Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	14	3 4 6 7	10	835		TOPSOIL (24")									13
2 SS	18	17 14 8	22			SILTY SAND WITH GRAVEL, brown, moist, (FILL)									
						2 (835.1)									
3 SS	18	6 8 8	16	5		4.8 (832.3)									
						6.5 (830.6)									
4 SS	18	8 14 16	30	830		SILTY SAND WITH GRAVEL, brown, moist, (FILL)									
						11.5 (825.6)									
5 SS	18	17 21 19	40	10		SAND WITH GRAVEL, brown, moist, (FILL)									
						13.5 (823.6)									
6 SS	12	17 40 20	60	825		SAND, brown, moist, medium dense									
						17.4 (819.7)									
7 SS	10	10 8 6	14	15		SAND, brown, moist, medium dense	SP								
						17.4 (819.7)									
8 SS	8	3 4 6	10	20		SILTY SAND, brown and gray, moist to wet, medium dense	SM								
						21 (816.1)									

End of Boring at 21.0 ft.

Boring was offset 9.8 feet south of staked location due to slope.
Elevation noted on log was estimated from visual inspection of elevation difference between staked location and drilled location.

WATER & CAVE-IN OBSERVATION DATA			
	WATER ENCOUNTERED DURING DRILLING: 20.3ft.		CAVE DEPTH AT COMPLETION: 9.8ft.
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: NMR
	WATER LEVEL AFTER 0 HOURS: NMR	NE = Not Encountered; NMR = No Measurement Recorded	

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.



PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-24	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/15/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/15/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 45		WisDOT STRUCTURE ID No		LONGITUDE		NORTHING 361453	
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Les Paul Pkwy		EASTING 2474884		SURFACE ELEVATION 833.4 ft	
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		OFFSET	
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha									











Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	6	3 3 5	8			CONCRETE (9") 0.8 (832.6)									
2 SS	16	20 24 28	52		830	BASE COURSE (14") 1.9 (831.5)									
3 SS	12	17 12 19	31	5		SILTY SAND WITH GRAVEL, brown, moist, (FILL)									
4 SS	18	15 17 15	32		825										
5 SS	16	4 7 12	19	10		9 (824.4)									
6 SS	16	11 17 20	37		820	LEAN CLAY, brown, moist, trace gravel, (FILL)									
7 SS	14	12 14 17	31	15		11.4 (822)									
8 SS	18	25 35 40	75	20		SAND WITH GRAVEL, brown, moist to wet, dense									
						17.6 (815.8)									
						SANDY SILT, gray, moist, very dense, trace gravel									
						21 (812.4)									
End of Boring at 21.0 ft.															

WATER & CAVE-IN OBSERVATION DATA															
☑	WATER ENCOUNTERED DURING DRILLING: 15ft.					☑	CAVE DEPTH AT COMPLETION: 8.5ft.					WET <input type="checkbox"/>			
☑	WATER LEVEL AT COMPLETION: NE					☑	CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>			
☑	WATER LEVEL AFTER 0 HOURS: NMR						NE = Not Encountered; NMR = No Measurement Recorded					WET <input type="checkbox"/>			
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.															






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PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-25	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/14/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/14/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG Geoprobe		WISDOT STRUCTURE ID No		LONGITUDE		NORTHING 361621	
CREW CHIEF M. Panfil		DRILLING METHOD / HOLE SIZE Casing		ROADWAY NAME Les Paul Pkwy		EASTING 2475469		SURFACE ELEVATION 824.9 ft	
FIELD LOG BY J. Krase		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		OFFSET	
LOG QC BY E. Jeske		TOWNSHIP 67-Waukesha		RANGE		SECTION		1/4 SECTION	
COUNTY									

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _p or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	10	3 4 8 12	12			TOPSOIL (6") 0.5 (824.4) SANDY LEAN CLAY WITH GRAVEL, dark brown, moist, (FILL)									
2 SS	10	7 10 14	24											9	
3 SS	8	3 5 4	9	5	820									19	
4 SS	18	1 2 3	5			LEAN CLAY, grayish brown, moist, medium stiff	CL							17	Sample disturbed unable to obtain Q _p
5 SS	8	3 5 12	17	10	815										
						SILTY SAND, brown, wet, medium dense 10 (814.9)	SM								
						SAND, brown, wet, medium dense 11.1 (813.8)	SM								
6 SS	8	12 12 15	27				SP								
						SILTY SAND, brown, wet, medium dense 13.6 (811.3)	SM								
7 SS	10	10 13 12	25	15	810		SM								
						16 (808.9)									






End of Boring at 16.0 ft.

WATER & CAVE-IN OBSERVATION DATA				
	WATER ENCOUNTERED DURING DRILLING: 11ft.		CAVE DEPTH AT COMPLETION: NMR	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NMR		CAVE DEPTH AFTER 0 HOURS: NMR	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.				



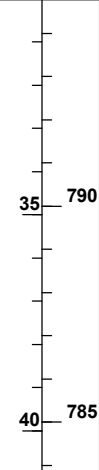

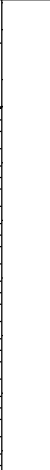





PROJECT NAME Great Water Alliance				BORING LOG				BORING No		RF-B-26	
PROJECT ID No 00521741								PAGE No		1 of 2	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No			DATE STARTED 10/12/17			HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29	
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10			DATE COMPLETED 10/12/17			LATITUDE			
CREW CHIEF S. Gonyer		DRILLING RIG Diedrich D50 ATV			WisDOT STRUCTURE ID No			LONGITUDE			
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 3 1/4 HSA			ROADWAY NAME Les Paul Pkwy			NORTHING 361833			
LOG QC BY E. Jeske		HAMMER TYPE Auto	EFFICIENCY 82%	STATION		OFFSET		EASTING 2476019			
COUNTY 67-Waukesha		TOWNSHIP	RANGE	SECTION	1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 824.8 ft		

[illegible]



WATER & CAVE-IN OBSERVATION DATA

WATER & CAVE IN OBSERVATION DATA						
	WATER ENCOUNTERED DURING DRILLING:	12ft.		CAVE DEPTH AT COMPLETION:	6.3ft.	WET <input type="checkbox"/> DRY <input type="checkbox"/>
	WATER LEVEL AT COMPLETION:	NMR		CAVE DEPTH AFTER 0 HOURS:	NMR	WET <input type="checkbox"/> DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS:	NMR	NE = Not Encountered; NMR = No Measurement Recorded			



NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-26								
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 10/12/17		PAGE No 2 of 2		HORIZONTAL DATUM State Plane-South								
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 10/12/17		LATITUDE		VERTICAL DATUM NGVD29								
DRILLING CONTRACTOR GESTRA		DRILLING RIG Diedrich D50 ATV		WISDOT STRUCTURE ID No		LONGITUDE										
CREW CHIEF S. Gonyer		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Les Paul Pkwy		NORTHING 361833										
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 82%		STATION		EASTING 2476019								
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION								
COUNTY 67-Waukesha								SURFACE ELEVATION 824.8 ft								
Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments		USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
11 SS	12	10 10 14	24		790	SILT WITH SAND, gray to brownish, wet, medium dense to dense		ML								
						32.5 (792.3) SAND WITH SILT, brown, wet, medium dense to dense, trace gravel		SP-SM								
12 SS	10	10 12 13	25													
13 SS	10	12 14 16	30	40	785	41 (783.8) End of Boring at 41.0 ft.										
WATER & CAVE-IN OBSERVATION DATA																
	WATER ENCOUNTERED DURING DRILLING: 12ft.						CAVE DEPTH AT COMPLETION: 6.3ft.					WET <input type="checkbox"/>		DRY <input type="checkbox"/>		
	WATER LEVEL AT COMPLETION: NMR						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>		DRY <input type="checkbox"/>		
	WATER LEVEL AFTER 0 HOURS: NMR					NE = Not Encountered; NMR = No Measurement Recorded										
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.																

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PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-27	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 10/12/17		PAGE No 1 of 2		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 10/12/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No		WISDOT STRUCTURE ID No		LONGITUDE		LATITUDE	
CREW CHIEF S. Gonyer		DRILLING RIG Diedrich D50 ATV		ROADWAY NAME Les Paul Pkwy		NORTHING 361954		EASTING 2476339	
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		STATION		OFFSET		SURFACE ELEVATION 825.7 ft	
LOG QC BY E. Jeske		HAMMER TYPE Auto		EFFICIENCY 82%		1/4 SECTION		1/4 SECTION	
COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION		SURFACE ELEVATION	
Sample No / Type		Sample Recovery (in)		Blow Counts		N - Value		Depth (ft)	
Elevation (ft)		Soil / Rock Description and Geological Origin for Each Major Unit / Comments		USCS / AASHTO		Graphic		Well Diagram	
PID / FID		Unconfined Comp. Strength Q _p or (Q _u) (tsf)		Liquid Limit (%)		Plasticity Index (%)		Moisture Content (%)	
Notes									
1 SS		16		1 2 12 16		14		825	
								1 (824.7)	
								GRAVEL WITH SAND, gray, moist, (FILL)	
								1.7 (824)	
								SILTY SAND WITH GRAVEL, brown, moist to wet, (FILL)	
								5	
								820	
								6.1 (819.6)	
								LEAN CLAY, gray, moist, very stiff	
								CL	
								8.8 (816.9)	
								SILT, gray, moist, medium dense	
								10	
								815	
								5	
								8	
								18	
								ML	
								17	
								15	
								810	
								16.5 (809.2)	
								SILTY SAND, gray, moist to wet, medium dense, trace gravel	
								SM	
								20	
								805	
								Wet at 19.5'	
								22.1 (803.6)	
								SAND, gray, wet, medium dense	
								SP	
								25	
								800	
								30	
WATER & CAVE-IN OBSERVATION DATA									
WATER ENCOUNTERED DURING DRILLING: 3ft. CAVE DEPTH AT COMPLETION: 5.5ft. WET <input type="checkbox"/> DRY <input type="checkbox"/>									
WATER LEVEL AT COMPLETION: NMR CAVE DEPTH AFTER 0 HOURS: NMR WET <input type="checkbox"/> DRY <input type="checkbox"/>									
WATER LEVEL AFTER 0 HOURS: NMR NE = Not Encountered; NMR = No Measurement Recorded									
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.									

\\GESTRA-SERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG					BORING No		RF-B-27	
PROJECT ID No 00521741								PAGE No 2 of 2				
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No			DATE STARTED 10/12/17			HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29		
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10			DATE COMPLETED 10/12/17			LATITUDE				
CREW CHIEF S. Gonyer		DRILLING RIG Diedrich D50 ATV			WisDOT STRUCTURE ID No			LONGITUDE				
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 3 3/4 HSA			ROADWAY NAME Les Paul Pkwy			NORTHING 361954				
LOG QC BY E. Jeske		HAMMER TYPE Auto	EFFICIENCY 82%		STATION		OFFSET		EASTING 2476339			
COUNTY 67-Waukesha		TOWNSHIP	RANGE	SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 825.7 ft		



[illegible]

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 3ft.		CAVE DEPTH AT COMPLETION: 5.5ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NMR		CAVE DEPTH AFTER 0 HOURS: NMR	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>



NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

\\GESTRASERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-28	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/12/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/12/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 45		WISDOT STRUCTURE ID No		LONGITUDE		LATITUDE	
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Les Paul Pkwy		NORTHING 362197		LONGITUDE	
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		EASTING 2476984	
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
SURFACE ELEVATION 831.1 ft		TOWNSHIP		RANGE		SECTION		1/4 SECTION	

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	18	4 8 8 9	16	830	830.6	TOPSOIL (6")									Boring drilled on gravel access road from Les Paul Parkway to fields north of roadway.
2 SS	18	6 12 10	22	829.3	829.3	SAND WITH GRAVEL, brown, moist, with dark brown clay seams, (FILL)									
3 SS	18	10 11 10	21	825	825	SILTY SAND WITH GRAVEL, brown, very moist to wet, (FILL)									
4 SS	5	8 2 1	3	823.8	823.8	LEAN CLAY, black with gray, very moist to wet, very soft, with organics	CL							48	LOI = 8.4%
5 SS	4	1 1 17	18	820.2	820.2	Wet at 9.5', large gravel piece in sample SS-5									
6 SS	16	18 10 12	22	817.2	817.2	SAND WITH GRAVEL, gray, wet, medium dense	SP								
7 SS	12	3 5 5	10	815.1	815.1	SILTY SAND, dark gray, wet, medium dense	SM								
End of Boring at 16.0 ft.															






WATER & CAVE-IN OBSERVATION DATA															
☑	WATER ENCOUNTERED DURING DRILLING: 7ft.					☑	CAVE DEPTH AT COMPLETION: 7.2ft.					WET	☐		
☑	WATER LEVEL AT COMPLETION: NE					☑	CAVE DEPTH AFTER 0 HOURS: NMR					WET	☐		
☑	WATER LEVEL AFTER 0 HOURS: NMR						NE = Not Encountered; NMR = No Measurement Recorded					WET	☐		
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.															

PROJECT NAME Great Water Alliance				BORING LOG					BORING No		RF-B-29		
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/12/17		PAGE No				1 of 1			
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No		DATE COMPLETED 9/12/17		HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29					
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10		LATITUDE									
CREW CHIEF M. Panfil		DRILLING RIG Geoprobe		WisDOT STRUCTURE ID No		LONGITUDE							
FIELD LOG BY B. Moede		DRILLING METHOD / HOLE SIZE 3 3/4 HSA		ROADWAY NAME Les Paul Pkwy		NORTHING 362456							
LOG QC BY E. Jeske		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		OFFSET		EASTING 2477635			
COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 831.1 ft	

[illegible]

End of Boring at 21.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 6ft.		CAVE DEPTH AT COMPLETION: 2ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: 6ft.		CAVE DEPTH AFTER 0 HOURS: NMR	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	DRY <input type="checkbox"/>

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.



\\GESTRASERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19\\GESTRASERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19































\\GESTRASERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

\\GESTRASERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19






\\GESTRASERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

\\GESTRASERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG					BORING No RF-B-30A	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 12/29/17		PAGE No 1 of 2		HORIZONTAL DATUM State Plane-South		
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 12/29/17		VERTICAL DATUM NGVD29		LATITUDE		
DRILLING CONTRACTOR GESTRA		DRILLING RIG Diedrich D50 ATV		WISDOT STRUCTURE ID No		LONGITUDE		NORTHING 363060		
CREW CHIEF S. Gonyer		DRILLING METHOD / HOLE SIZE 3 3/4 HSA		ROADWAY NAME Les Paul Pkwy		EASTING 2478517		SURFACE ELEVATION 833.7 ft		
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 82%		STATION		1/4 SECTION		
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION
COUNTY 67-Waukesha		COUNTY		COUNTY		COUNTY		COUNTY		COUNTY



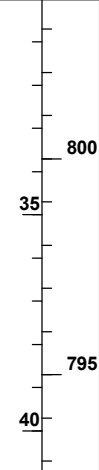



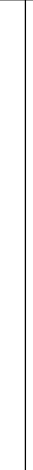















Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _p or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
					PEAT, black, moist, very loose									
1 SS	15	1 1 1	2	5 830										
					Color changed to brown at 7'									
2 SS	15	0 0 0	0	10 825										
					12.6 (821.1)									
					ORGANIC SILT, gray, very moist, very loose									
3 SS	18	0 0 0	0	15 820		OH								
					17.8 (815.9)									
					SILT, dark gray, moist, loose to medium dense									
4 SS	18	3 4 5	9	20 815										
														
														
5 SS	14	7 9 6	15	25 810		ML								
					Color changed to gray at 24.5'									
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														
														

WATER & CAVE-IN OBSERVATION DATA



	WATER ENCOUNTERED DURING DRILLING: 18ft.		CAVE DEPTH AT COMPLETION: NMR	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: 24.5ft.		CAVE DEPTH AFTER 0 HOURS: NMR	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	DRY <input type="checkbox"/>

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.






\\GESTRA\SERVER\MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-30A									
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 12/29/17		PAGE No 2 of 2		HORIZONTAL DATUM State Plane-South									
CONSULTANT Greeley & Hansen		DRILLING CONTRACTOR PROJECT No 17016-10		DATE COMPLETED 12/29/17		VERTICAL DATUM NGVD29		LATITUDE									
DRILLING CONTRACTOR GESTRA		DRILLING RIG Diedrich D50 ATV		WISDOT STRUCTURE ID No		LONGITUDE											
CREW CHIEF S. Gonyer		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Les Paul Pkwy		NORTHING 363060											
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 82%		STATION		EASTING 2478517									
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION									
COUNTY 67-Waukesha								SURFACE ELEVATION 833.7 ft									
Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments		USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _p or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes	
6 SS	18	6 7 8	15		800	SILT, dark gray, moist, loose to medium dense		ML									
7 SS	18	6 8 8	16		35		37.8 (795.9)		ML								
						SILT WITH SAND, gray, very moist to moist, medium dense											
8 SS	18	4 7 9	16	40		41 (792.7)											
End of Boring at 41.0 ft.																	
WATER & CAVE-IN OBSERVATION DATA																	
	WATER ENCOUNTERED DURING DRILLING: 18ft.						CAVE DEPTH AT COMPLETION: NMR					WET <input type="checkbox"/>		DRY <input type="checkbox"/>			
	WATER LEVEL AT COMPLETION: 24.5ft.						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>		DRY <input type="checkbox"/>			
	WATER LEVEL AFTER 0 HOURS: NMR					NE = Not Encountered; NMR = No Measurement Recorded											
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.																	



\\GESTRA\SERVER\MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19











PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-31	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/13/17		PAGE No 1 of 1		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/13/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG CME 45		WISDOT STRUCTURE ID No		LONGITUDE		NORTHING 363176	
CREW CHIEF M. Rhodes		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Les Paul Pkwy		EASTING 2478681		SURFACE ELEVATION 841 ft	
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 96%		STATION		OFFSET	
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha									






Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
					840	CONCRETE (10")									
1 SS	10	10 12 10	22			BASE COURSE (6")									
2 SS	16	12 10 14	24			SILTY SAND WITH GRAVEL, brown, moist, with clayey seams, (FILL)									Fines = 18%
3 SS	4	21 5 3	8	5											
4 SS	12	0 0 1	1			Wet at 7'									
						SANDY LEAN CLAY, brown, moist, trace gravel, (FILL)									23
5 SS	12	2 3 6	9	10		SILTY SAND WITH GRAVEL, brown, moist, (FILL)									
6 SS	16	8 17 15	32												
7 SS	8	10 5 3	8	15		LEAN CLAY WITH SAND AND GRAVEL, dark gray and brown, moist, stiff									19
8 SS	6	3 4 5	9	20			CL								
					820										
End of Boring at 21.0 ft.															



WATER & CAVE-IN OBSERVATION DATA															
	WATER ENCOUNTERED DURING DRILLING: 7ft.						CAVE DEPTH AT COMPLETION: 8.1ft.					WET <input type="checkbox"/>			
	WATER LEVEL AT COMPLETION: NE						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>			
	WATER LEVEL AFTER 0 HOURS: NMR						NE = Not Encountered; NMR = No Measurement Recorded					WET <input type="checkbox"/>			
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.															



\\GESTRA\SERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-31A	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 12/29/17		PAGE No 1 of 2		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		DRILLING CONTRACTOR PROJECT No 17016-10		DATE COMPLETED 1/19/18		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING RIG Diedrich D50 ATV		WisDOT STRUCTURE ID No		LONGITUDE		NORTHING 363301	
CREW CHIEF S. Gonyer		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Les Paul Pkwy		EASTING 2478457		SURFACE ELEVATION 838.2 ft	
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 82%		STATION		OFFSET	
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha									

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						TOPSOIL (15")									
						1.3 (836.9)									
						SILT, brown, wet, medium dense									
1 SS	18	4 7 7	14	5	835		ML								
						7.8 (830.4)									
2 SS	14	3 32 5	37	10	830	SILTY SAND WITH GRAVEL, brown, moist to very moist, dense									
							SM								
3 SS	8	7 17 18	35	15	825	Color changed to gray at 14.5'									
4 SS	4	50/4"	R	20	820	GRAVEL WITH SAND, brown, wet, very dense									Driller noted rig chatter from 19' to 27'
							GP								
5 SS	8	17 50/3"	R	25	815										
6 CORE	54.5			30	810	DOLOMITE, cherty, light gray, highly fractured with iron staining 27' - 29'									NQ core from 27' to 32'






WATER & CAVE-IN OBSERVATION DATA															
	WATER ENCOUNTERED DURING DRILLING: 4.5ft.						CAVE DEPTH AT COMPLETION: 7.8ft.					WET <input type="checkbox"/>			
	WATER LEVEL AT COMPLETION: 2.7ft.						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>			
	WATER LEVEL AFTER 0 HOURS: NMR					NE = Not Encountered; NMR = No Measurement Recorded					WET <input type="checkbox"/>				
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.															

PROJECT NAME Great Water Alliance				BORING LOG					BORING No		RF-B-31A	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 12/29/17		PAGE No 2 of 2		HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29		
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 1/19/18		LATITUDE		LONGITUDE				
DRILLING CONTRACTOR GESTRA		DRILLING METHOD / HOLE SIZE 3 3/4 HSA		ROADWAY NAME Les Paul Pkwy		NORTHING 363301		EASTING 2478457				
CREW CHIEF S. Gonyer		DRILLING RIG Diedrich D50 ATV		WiSDOT STRUCTURE ID No		SURFACE ELEVATION 838.2 ft						
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 82%		STATION		OFFSET				
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION		
COUNTY 67-Waukesha												

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _p or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
					DOLOMITE, cherty, light gray, highly fractured with iron staining 27' - 29' 32 (806.2)									RQD = 4%



End of Boring at 32.0 ft.












WATER & CAVE-IN OBSERVATION DATA






	WATER ENCOUNTERED DURING DRILLING: 4.5ft.		CAVE DEPTH AT COMPLETION: 7.8ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: 2.7ft.		CAVE DEPTH AFTER 0 HOURS: NMR	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>



NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

\\GESTRA\SERVER\MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19

PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-32	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/14/17		PAGE No 1 of 2		HORIZONTAL DATUM State Plane-South	
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/14/17		VERTICAL DATUM NGVD29		LATITUDE	
DRILLING CONTRACTOR GESTRA		DRILLING CONTRACTOR PROJECT No 17016-10		WISDOT STRUCTURE ID No		LONGITUDE		LATITUDE	
CREW CHIEF M. Rhodes		DRILLING RIG Diedrich D50 ATV		ROADWAY NAME Les Paul Pkwy		NORTHING 363672		EASTING 2479029	
FIELD LOG BY L. Rykoskey		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		STATION		OFFSET		SURFACE ELEVATION 842.9 ft	
LOG QC BY E. Jeske		HAMMER TYPE Auto		EFFICIENCY 82%		1/4 SECTION		1/4 SECTION	
COUNTY 67-Waukesha		TOWNSHIP		RANGE		SECTION		SURFACE ELEVATION	




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q _u or (Q _u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	5	1 1 1 1	2			TOPSOIL (26")									
2 SS	4	1 3 3 3	6	840		SANDY SILT, gray, moist to wet, (FILL) 2.2 (840.7)								98	
3 SS	8	3 3 3 3	6	5		GRAVEL WITH SAND, gray, wet, (FILL) 6.1 (836.8)								12	
4 SS	12	8 8 8 8	16	835											
5 SS	7	6 9 8 8	17	10											
6 SS	16	13 11 12 12	23	830											
7 SS	12	8 2 3 3	5	15		SAND WITH GRAVEL, gray, wet, loose 13.9 (829) SILTY SAND, gray, very moist, loose 15 (827.9)	SP								
							SM								
				825		SAND, brown, wet, medium dense 17.5 (825.4)									
8 SS	12	10 9 9 9	18	20		Gravel seam at 20.5'	SP								
				820		GRAVEL WITH SAND, gray, wet, very dense 22.5 (820.4)									
9 SS	3	50/3" R		25			GP								
				815		DOLOMITE, light gray 26 (816.9)									NQ core from 26' to 33' RQD = 79%
1 CORE	84			30											

WATER & CAVE-IN OBSERVATION DATA															
	WATER ENCOUNTERED DURING DRILLING: 5ft.						CAVE DEPTH AT COMPLETION: NMR					WET <input type="checkbox"/>			
	WATER LEVEL AT COMPLETION: NMR						CAVE DEPTH AFTER 0 HOURS: NMR					WET <input type="checkbox"/>			
	WATER LEVEL AFTER 0 HOURS: NMR					NE = Not Encountered; NMR = No Measurement Recorded					WET <input type="checkbox"/>				
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.															

PROJECT NAME Great Water Alliance				BORING LOG					BORING No		RF-B-32	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/14/17		PAGE No 2 of 2		HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29		
CONSULTANT Greeley & Hansen		CONSULTANT PROJECT No 17016-10		DATE COMPLETED 9/14/17		LATITUDE		LONGITUDE				
DRILLING CONTRACTOR GESTRA		DRILLING METHOD / HOLE SIZE 3 3/4 HSA		ROADWAY NAME Les Paul Pkwy		NORTHING 363672		EASTING 2479029				
CREW CHIEF M. Rhodes		DRILLING RIG Diedrich D50 ATV		WiSDOT STRUCTURE ID No		SURFACE ELEVATION 842.9 ft						
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 82%		STATION		OFFSET				
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION		
COUNTY 67-Waukesha												



Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q_u or $(Q_u)_f$ (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
				810	DOLOMITE, light gray 33 (809.9)									

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 5ft.		CAVE DEPTH AT COMPLETION: NMR	WET <input type="checkbox"/> DRY <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NMR		CAVE DEPTH AFTER 0 HOURS: NMR	WET <input type="checkbox"/> DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR		NE = Not Encountered; NMR = No Measurement Recorded	

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

\\GESTRA-SERVER-MKE\PROJECTS\2017\MILWAUKEE-10\17016-10 (WAUKESHA WATER UTILITY)\GINT_LOGS.GPJ Great Water Alliance 1/18/19






PROJECT NAME Great Water Alliance				BORING LOG				BORING No RF-B-34	
PROJECT ID No 00521741		CONSULTANT PROJECT No		DATE STARTED 10/12/17		HORIZONTAL DATUM State Plane-South		VERTICAL DATUM NGVD29	
CONSULTANT Greeley & Hansen		DRILLING CONTRACTOR PROJECT No 17016-10		DATE COMPLETED 10/12/17		LATITUDE			
DRILLING CONTRACTOR GESTRA		DRILLING RIG Diedrich D50 ATV		WisDOT STRUCTURE ID No		LONGITUDE			
CREW CHIEF S. Gonyer		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Les Paul Pkwy		NORTHING 364559			
FIELD LOG BY L. Rykoskey		HAMMER TYPE Auto		EFFICIENCY 82%		STATION		OFFSET	
LOG QC BY E. Jeske		TOWNSHIP		RANGE		SECTION		1/4 SECTION	
COUNTY 67-Waukesha								SURFACE ELEVATION 852.9 ft	

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	PID / FID	Unconfined Comp. Strength Q_u or (Q_u) (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	20	2 6 11 9	17			TOPSOIL (6") 0.5 (852.4)									
2 SS	12	4 5 7	12		850	SILT, gray, moist, medium dense	ML							14	
						3.8 (849.1)								14	
3 SS	8	4 5 5	10	5		SILTY SAND WITH GRAVEL, brown, very moist to wet, medium dense	SM								
4 SS	10	5 6 9	15		845										
						8.7 (844.2)									
5 SS	10	8 8 17	25	10		POORLY GRADED GRAVEL WITH SILT AND SAND, light brown, wet, medium dense	GP-GM								Fines = 12%
6 SS	12	8 12 50/5"	R		840										
						13 (839.9)									
7 SS	10	20 41 50/5"	R	15		GRAVEL WITH SAND, light brown, wet, very dense	GP-GM								
						17 (835.9)									

End of Boring at 17.0 ft.

Driller notes auger refusal at 17'. Possible bedrock.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 5.5ft.		CAVE DEPTH AT COMPLETION: 5ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: NMR	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: NMR	NE = Not Encountered; NMR = No Measurement Recorded		WET <input type="checkbox"/>

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.



Appendix B – Soil Boring Summary Table



(NO TEXT FOR THIS PAGE)

Boring No.	Approximate Ground Surface Elevation (MSL) (feet)	Estimated Water Depth/ Elevation During Drilling (feet)	Estimated Water Depth/ Elevation Upon Completion of Drilling (feet)	Estimated Seasonal High Groundwater Elevation (feet)	Estimated Depth of Organic Fill and Organic Soil/ Elevation to Suitable Natural Soils (feet)	Estimated Depth/ Elevation of very dense soils and/or possible cobbles and boulders (feet)	Estimated Depth/ Elevation of Apparent Bedrock (feet)	Issues
RF-B-32	842.9	5/ 837.9	Not Observed	842 ^[b]	13.9/ 829.0	22.5/ 820.4	26/ 816.9	1, 3, 4, 5
RF-B-33	844.1	1/ 843.1	1/ 843.1	842 ^[b]	9.8/ 834.3	24.8/ 819.3		1, 3, 5
RF-B-34	852.9	5.5/ 847.4	Not Observed	852.4		13/ 839.9	17/ 835.9	1, 2
RF-B-35	855.2	Not Observed	Not Observed	<850		2/ 853.2	6/ 849.2	2
RF-B-36	863.4	8/ 855.4	Not Observed	855.4			11.8/ 851.6	1, 2
RF-B-36A	863.4	10.5/ 852.9	15.2/ 848.2	852.9		11.5/ 851.9	19/ 844.4	1, 2
RF-B-37	884.8	10/ 874.8	Not Observed	874.8		11.5/ 873.3	14.9/ 869.9	1, 2
RF-B-38	893.2	9.5/ 833.7	9/ 884.2	886.2		17.8/ 875.4		1
RF-B-39	898.8	7/ 891.8	Not Observed	891.8				1
RF-B-40	707.0	Not Observed	Not Observed	>700.7				
RF-B-41	718.3	7/ 711.3	Not Observed	711.3				1
RF-B-42	708.7	20.5/ 688.2	13/ 695.7	697.2				1
RF-B-43	712.2	Not Observed	Not Observed	^[a]				
RF-B-44	701.4	Not Observed	Not Observed	695.6				
RF-B-45	703.2	Not Observed	Not Observed	694.4				
RF-B-46	686.3	Not Observed	Not Observed	676.1				
RF-B-47	691.2	35/ 656.2	Not Observed	681.2				
RF-B-48	685.1	11/ 674.1	Not Observed	677.6				1
RF-B-49	675.7	5.4/ 670.3	NMR	670.3				1
RF-B-50	675.1	3.0/ 672.1	3.0/ 672.1	672.1				1
RF-B-51	674.0	4.0/ 670.0	NMR	670.0				1
RF-B-52	674.3	6.7/ 667.6	NMR	670.3				1

^[a] Upper 7 feet of boring hydro-vac, unable to determine transition for brown to gray soil. Season high is greater than EL. 705

^[b] Estimated seasonal high groundwater elevations assumed to be near or at the surface of the surrounding ground surface along Les Paul Parkway. Topographic maps from the Waukesha County GIS website were used to estimate the surrounding ground surface elevation near each boring.

Issue No.

1. Shallow water above estimated invert elevations for open cut trenches (9 to 12 feet below grade) or possibly above excavation invert elevations
2. Very dense soils and/or bedrock above estimated invert elevations for open cut trenches (9 to 12 feet) or possibly within the depth of trenchless excavation
3. Organic soils present above the estimated invert elevations for open cut trenches (9 to 12 feet), which are considered unsuitable for re-use as backfill
4. Unsuitable organic soils below estimated invert elevations for open cut trenches (9 to 12 feet) or possibly below trenchless excavation invert elevations
5. Perched water encountered within the existing embankment

(NO TEXT FOR THIS PAGE)



Appendix C – Corrosivity Test Results



(NO TEXT FOR THIS PAGE)

APPENDIX C – CORROSIVITY TEST RESULTS

Contract Package 5A – Corrosivity to Steel Pipe/ DIP Testing

Boring	Depth Below Existing Grade (ft)	pH	Saturated Resistivity (ohm-cm)	Chloride Content (mg/L)	Sulfide Content (mg/L)	Redox Potential	
						Eh (mV)	Temp (°C)
RF-B-4	7-8.5, 9.5-11, 12-13.5	8.2	2,500	180	0.98	189	22.6
RF-B-6 and RF-B-6A	*	8.0	2,700	200	0.26	260	21.4
RF-B-8	7-8.5, 9.5-11	8.4	4,800	100	0.34	227	22.5
RF-B-10	12-13.5, 14.5-16	8.3	1,700	180	0.28	247	22.6
RF-B-12	7-8.5, 9.5-11, 12-13.5	8.1	14,000	10	ND	226	22.5
RF-B-14	*	8.2	13,000	90	0.32	247	21.7
RF-B-16	7-8.5, 9.5-11, 12-13.5	7.8	4,300	70	0.49	250	22.6
RF-B-20	7-8.5, 9.5-11, 12-13.5	7.8	580	310	ND	164	22.5
RF-B-22	7-8.5, 9.5-11	8.3	990	540	0.36	225	22.7
RF-B-23 and RF-B-24	7-8.5, 9.5-11, 12-13.5, 14.5-16	8.4	5,400	110	0.11	222	22.5
RF-B-30	7-8.5, 9.5-11, 12-13.5	7.3	510	190	1.05	-13	22.5
RF-B-32	7-8.5, 9.5-11, 12-13.5, 14.5-16	8.0	6,200	60	0.09	234	22.5

ND = No Detection

* Testing performed on samples collected near the planned pipe depth

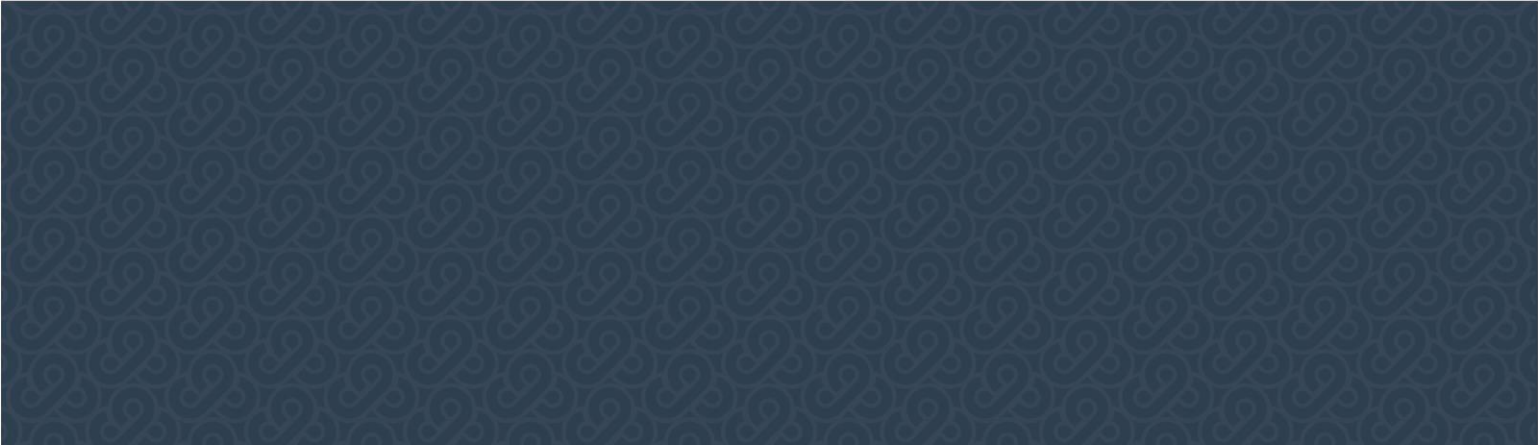
APPENDIX C – CORROSIVITY TEST RESULTS

Contract Package 5A – Corrosivity to PCCP Testing


Boring	Depth Below Existing Grade (ft)	Sulfate Content (ppm)
RF-B-4	7-8.5, 9.5-11, 12-13.5	30
RF-B-6 and RF-B-6A	*	40
RF-B-8	7-8.5, 9.5-11	10
RF-B-10	12-13.5, 14.5-16	ND
RF-B-12	7-8.5, 9.5-11, 12-13.5	ND
RF-B-14	*	ND
RF-B-16	7-8.5, 9.5-11, 12-13.5	50
RF-B-20	7-8.5, 9.5-11, 12-13.5	120
RF-B-22	7-8.5, 9.5-11	10
RF-B-23 and RF-B-24	7-8.5, 9.5-11, 12-13.5, 14.5-16	20
RF-B-30	7-8.5, 9.5-11, 12-13.5	1,980
RF-B-32	7-8.5, 9.5-11, 12-13.5, 14.5-16	60

ND = No Detection

* Testing performed on samples collected near the planned pipe depth



Appendix D – Laboratory Test Results



(NO TEXT FOR THIS PAGE)



Laboratory Test Results of Atterberg Limits of Soil

Project Name: Great Water Alliance Date: January 23, 2018
Project Number: 17016-10 Client: Greeley & Hansen
Project Location: Waukesha Co., WI
ASTM Designation: D4318

Sample Information

Type of Sample Split Spoon
Boring Number RF-B-5
Sample Number 3
Depth of Sample 4.5'-6'

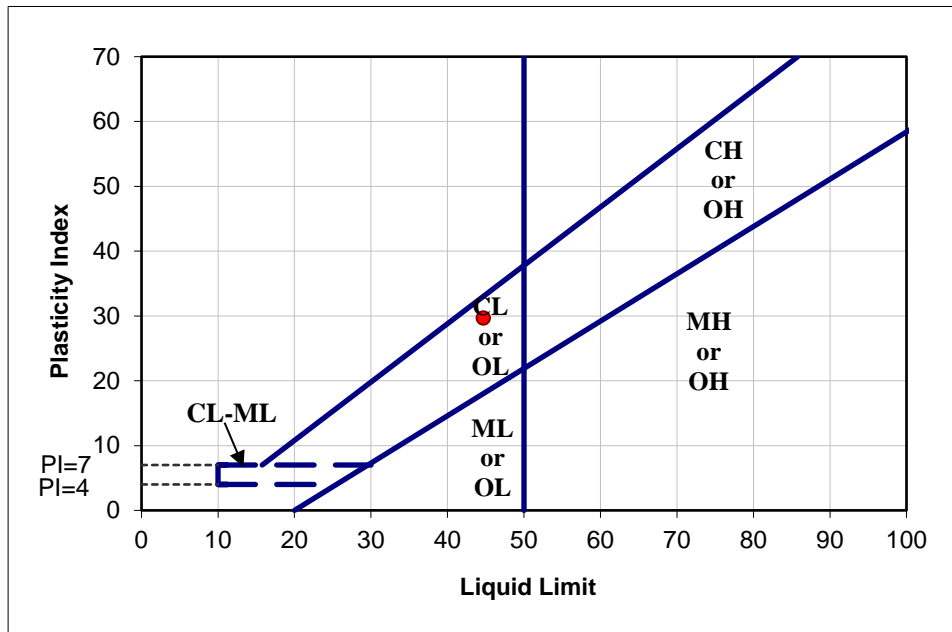
Determination of Liquid Limit

Cup Number	D11	B19	L18
Weight of Cup (g)	14.72	14.62	14.59
Weight of Wet Soil and Cup (g)	33.88	35.85	36.27
Weight of Dry Soil and Cup (g)	28.10	29.34	29.30
Moisture Content (%)	43.2	44.2	47.4
Blow Counts	32	25	15

Determination of Plastic Limit

Cup Number	L20	D30
Weight of Cup (g)	7.26	7.22
Weight of Wet Soil and Cup (g)	13.57	13.55
Weight of Dry Soil and Cup (g)	12.73	12.71
Moisture Content (%)	15.4	15.3

Compilation of Test Results



Liquid Limit	<u>45</u>
Plastic Limit	<u>15</u>
Plasticity Index	<u>30</u>
USCS Symbol	<u>CL</u>

Performed by: Bonnie Bills

Reviewed By: C. Anderson

GESTRA Engineering, Inc.



Laboratory Test Results of Atterberg Limits of Soil

Project Name: Great Water Alliance
Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: D4318

Date: January 23, 2018
Client: Greeley & Hansen

Sample Information

Type of Sample Split Spoon
Boring Number RF-B-8
Sample Number 3
Depth of Sample 4.5'-6'

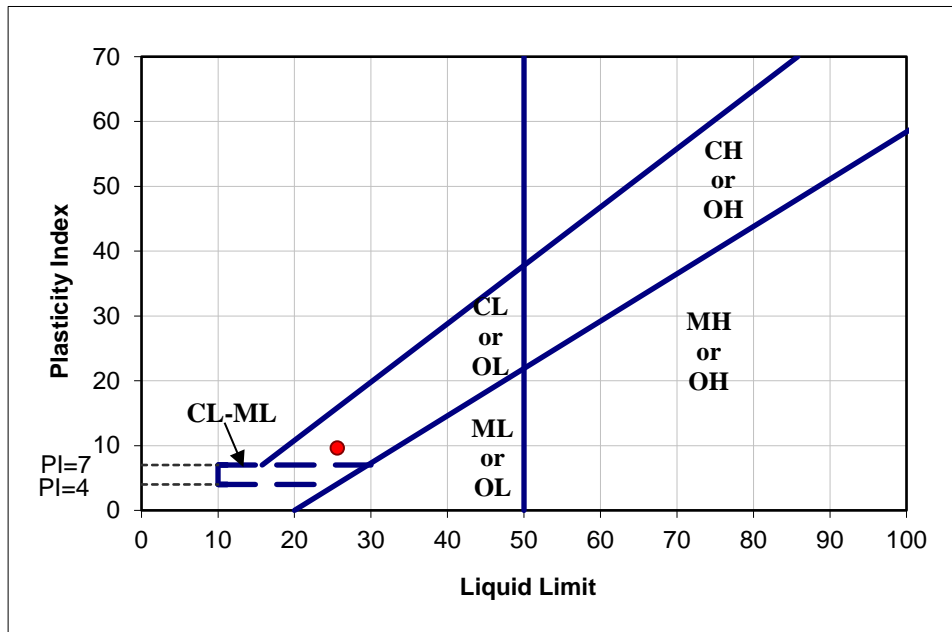
Determination of Liquid Limit

Cup Number	D9	D16	B27
Weight of Cup (g)	14.21	14.57	14.32
Weight of Wet Soil and Cup (g)	29.84	33.06	35.29
Weight of Dry Soil and Cup (g)	26.84	29.28	30.83
Moisture Content (%)	23.8	25.7	27.0
Blow Counts	35	25	17

Determination of Plastic Limit

Cup Number	L5	D22
Weight of Cup (g)	7.34	7.32
Weight of Wet Soil and Cup (g)	13.78	13.43
Weight of Dry Soil and Cup (g)	12.89	12.58
Moisture Content (%)	16.0	16.2

Compilation of Test Results



Liquid Limit	<u>26</u>
Plastic Limit	<u>16</u>
Plasticity Index	<u>10</u>
USCS Symbol	<u>CL</u>

Performed by: Bonnie Bills

Reviewed By: C. Anderson

GESTRA Engineering, Inc.



Laboratory Test Results of Atterberg Limits of Soil

Project Name: Great Water Alliance Date: January 23, 2018
Project Number: 17016-10 Client: Greeley & Hansen
Project Location: Waukesha Co., WI
ASTM Designation: D4318

Sample Information

Type of Sample Split Spoon
Boring Number RF-B-13
Sample Number 4
Depth of Sample 7'-8.5'

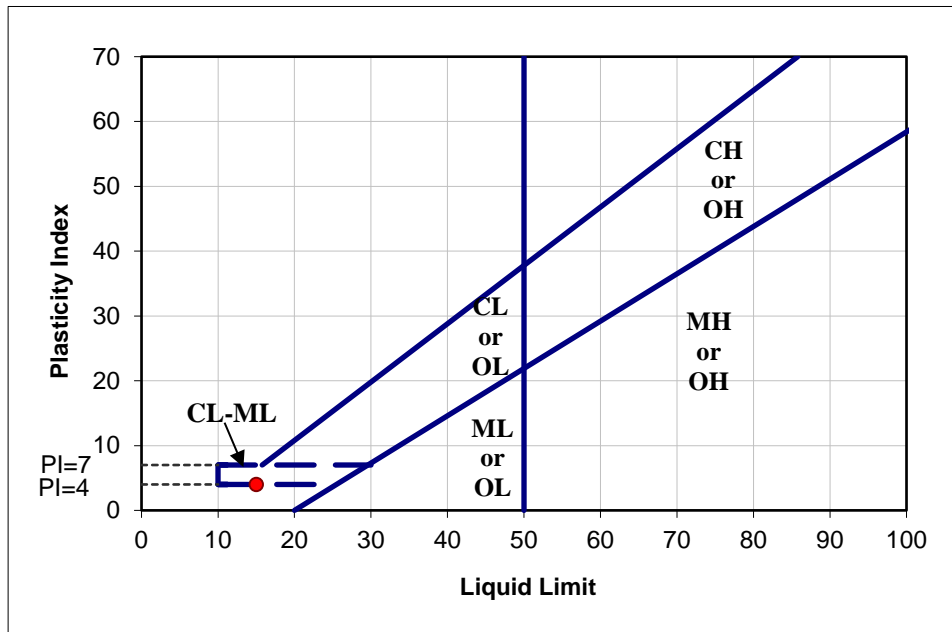
Determination of Liquid Limit

Cup Number	D21	D12	D24
Weight of Cup (g)	14.51	14.53	14.31
Weight of Wet Soil and Cup (g)	35.65	38.33	35.30
Weight of Dry Soil and Cup (g)	33.04	35.24	32.38
Moisture Content (%)	14.1	14.9	16.2
Blow Counts	35	24	15

Determination of Plastic Limit

Cup Number	B34	L2
Weight of Cup (g)	7.24	7.36
Weight of Wet Soil and Cup (g)	13.83	13.74
Weight of Dry Soil and Cup (g)	13.17	13.09
Moisture Content (%)	11.1	11.3

Compilation of Test Results



Liquid Limit 15
Plastic Limit 11
Plasticity Index 4
USCS Symbol CL-ML

Performed by: Bonnie Bills

Reviewed By: C. Anderson

GESTRA Engineering, Inc.



Laboratory Test Results of Atterberg Limits of Soil

Project Name: Great Water Alliance Date: January 23, 2018
Project Number: 17016-10 Client: Greeley & Hansen
Project Location: Waukesha Co., WI
ASTM Designation: D4318

Sample Information

Type of Sample Split Spoon
Boring Number RF-B-15
Sample Number 2
Depth of Sample 2'-3.5'

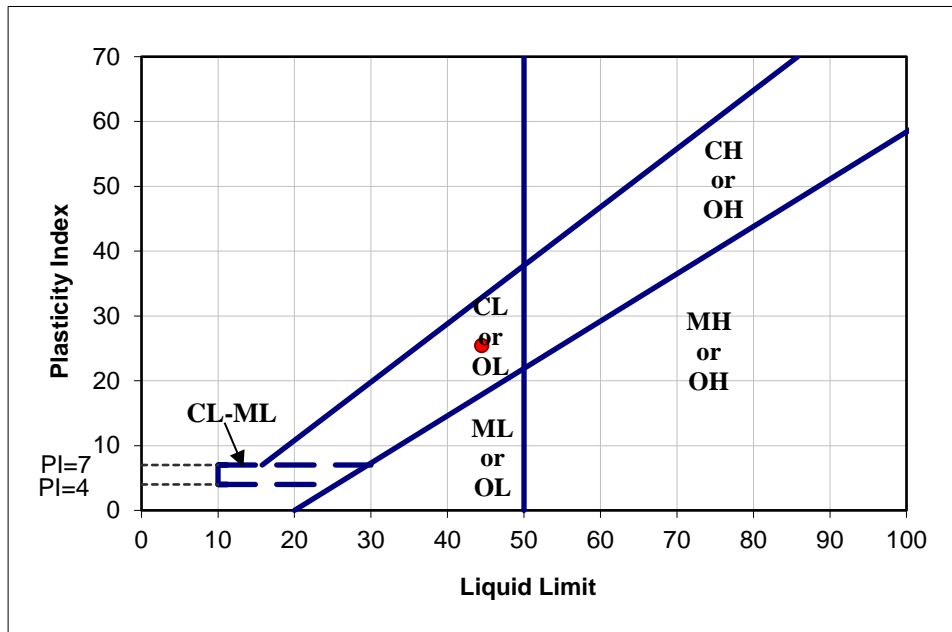
Determination of Liquid Limit

Cup Number	L7	L5	B2
Weight of Cup (g)	14.45	14.58	14.36
Weight of Wet Soil and Cup (g)	33.70	36.98	37.23
Weight of Dry Soil and Cup (g)	27.87	30.05	29.94
Moisture Content (%)	43.4	44.8	46.8
Blow Counts	30	22	16

Determination of Plastic Limit

Cup Number	D3	L14
Weight of Cup (g)	7.23	7.27
Weight of Wet Soil and Cup (g)	13.48	13.30
Weight of Dry Soil and Cup (g)	12.49	12.36
Moisture Content (%)	18.8	18.5

Compilation of Test Results



Liquid Limit	<u>44</u>
Plastic Limit	<u>19</u>
Plasticity Index	<u>25</u>
USCS Symbol	<u>CL</u>

Performed by: Bonnie Bills

Reviewed By: C. Anderson

GESTRA Engineering, Inc.



Laboratory Test Results of Atterberg Limits of Soil

Project Name: Great Water Alliance Date: January 23, 2018
Project Number: 17016-10 Client: Greeley & Hansen
Project Location: Waukesha Co., WI
ASTM Designation: D4318

Sample Information

Type of Sample Split Spoon
Boring Number RF-B-20
Sample Number 4
Depth of Sample 7'-8.5'

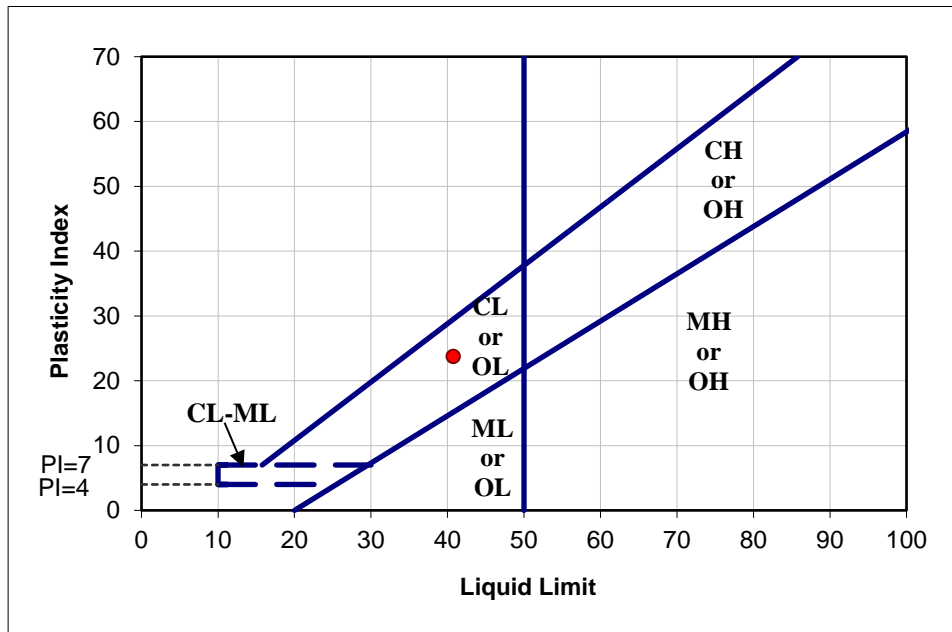
Determination of Liquid Limit

Cup Number	L6	D6	D14
Weight of Cup (g)	14.27	14.55	14.48
Weight of Wet Soil and Cup (g)	37.26	38.08	36.65
Weight of Dry Soil and Cup (g)	30.78	31.19	30.06
Moisture Content (%)	39.2	41.4	42.3
Blow Counts	34	21	16

Determination of Plastic Limit

Cup Number	B31	L12
Weight of Cup (g)	7.29	7.22
Weight of Wet Soil and Cup (g)	13.75	13.71
Weight of Dry Soil and Cup (g)	12.80	12.74
Moisture Content (%)	17.2	17.6

Compilation of Test Results



Liquid Limit	<u>41</u>
Plastic Limit	<u>17</u>
Plasticity Index	<u>24</u>
USCS Symbol	<u>CL</u>

Performed by: Bonnie BillsReviewed By: C. Anderson

GESTRA Engineering, Inc.



Laboratory Test Results of Atterberg Limits of Soil

Project Name: Great Water Alliance Date: January 23, 2018
Project Number: 17016-10 Client: Greeley & Hansen
Project Location: Waukesha Co., WI
ASTM Designation: D4318

Sample Information

Type of Sample Split Spoon
Boring Number RF-B-26
Sample Number 3
Depth of Sample 5.2'-6'

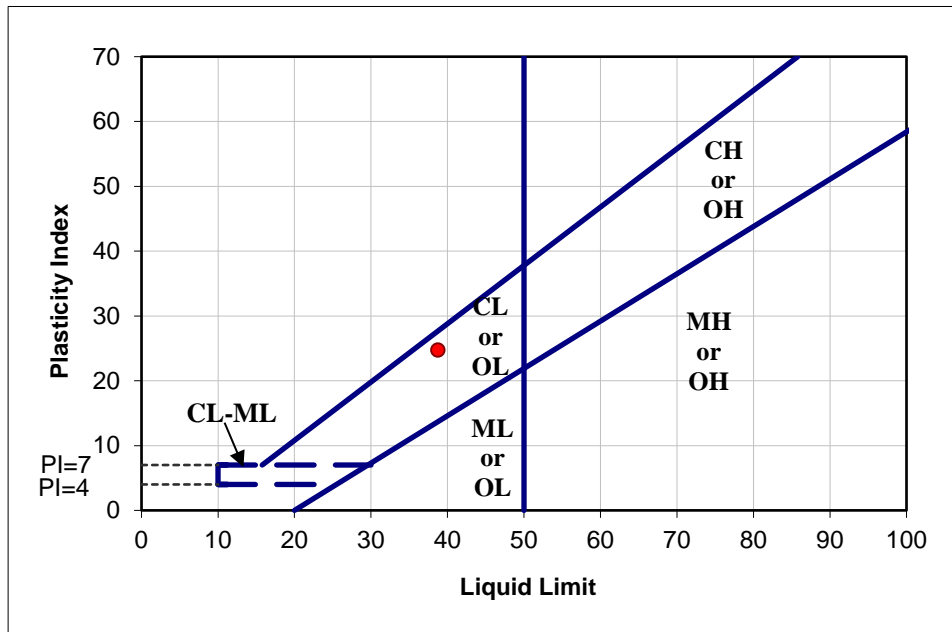
Determination of Liquid Limit

Cup Number	D17	D28	D23
Weight of Cup (g)	14.62	14.57	14.59
Weight of Wet Soil and Cup (g)	38.42	35.18	35.58
Weight of Dry Soil and Cup (g)	31.95	29.43	29.59
Moisture Content (%)	37.3	38.7	39.9
Blow Counts	35	24	18

Determination of Plastic Limit

Cup Number	D23	D9
Weight of Cup (g)	7.28	7.33
Weight of Wet Soil and Cup (g)	13.67	13.37
Weight of Dry Soil and Cup (g)	12.88	12.64
Moisture Content (%)	14.1	13.7

Compilation of Test Results



Liquid Limit	<u>39</u>
Plastic Limit	<u>14</u>
Plasticity Index	<u>25</u>
USCS Symbol	<u>CL</u>

Performed by: Bonnie Bills

Reviewed By: C. Anderson

GESTRA Engineering, Inc.



GESTRA Engineering, Inc

191 W. Edgerton Ave

Milwaukee, WI 53207

Phone: (414) 933-7444; Fax: (414) 933-7844

Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

Project Name: Great Water Alliance
Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

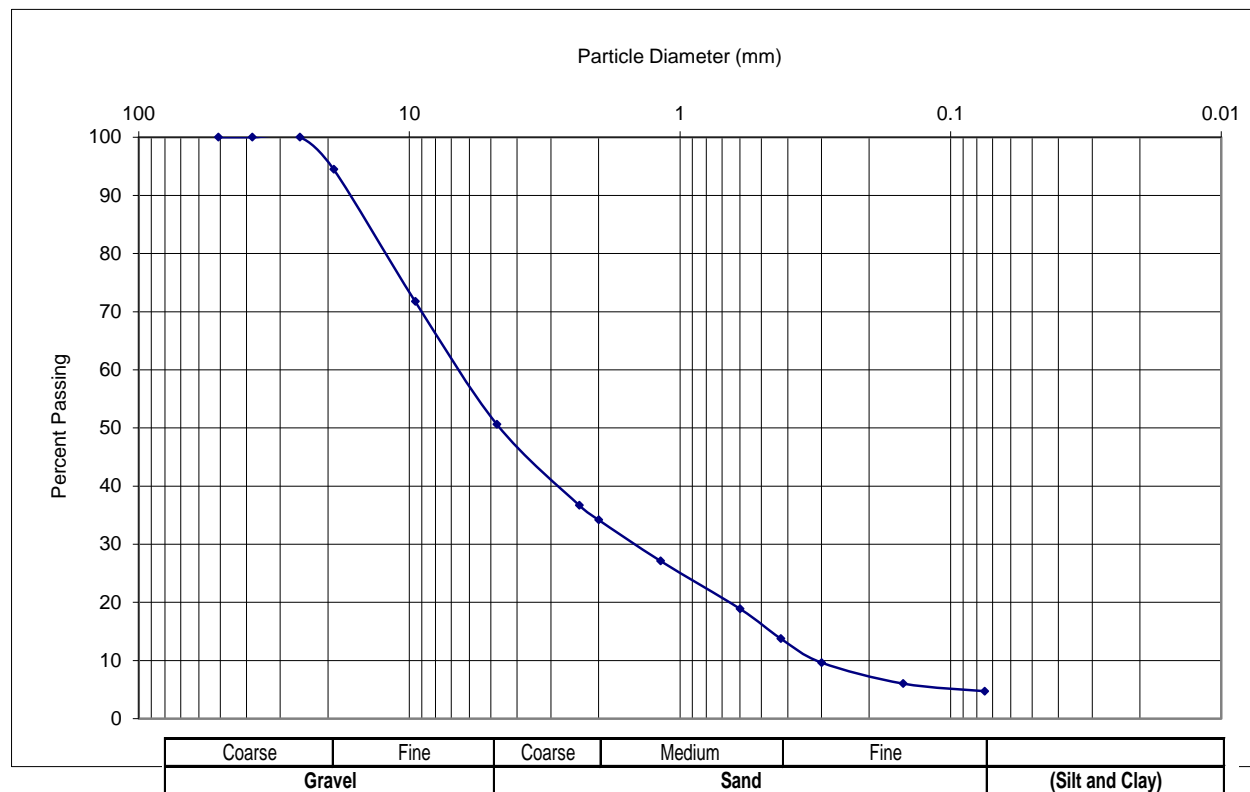
Date: January 24, 2018
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 3
Boring Number: RF-B-2 Depth of Sample: 4.5'-6'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	100.0
3/4	19.05	94.5
3/8	9.525	71.8
#4	4.75	50.6
#8	2.36	36.7
#10	2	34.2
#16	1.18	27.1
#30	0.6	18.9
#40	0.425	13.8
#50	0.3	9.6
#100	0.15	6.0
#200	0.075	4.7



Remarks: Gravel 49.4 % Sand 45.9 %
Passing #200 Sieve (Silt & Clay) 4.7 %

Performed by: Kim Starr

Reviewed by: C. Anderson

GESTRA Engineering, Inc.



GESTRA Engineering, Inc

191 W. Edgerton Ave

Milwaukee, WI 53207

Phone: (414) 933-7444; Fax: (414) 933-7844

Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

Project Name: Great Water Alliance
Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

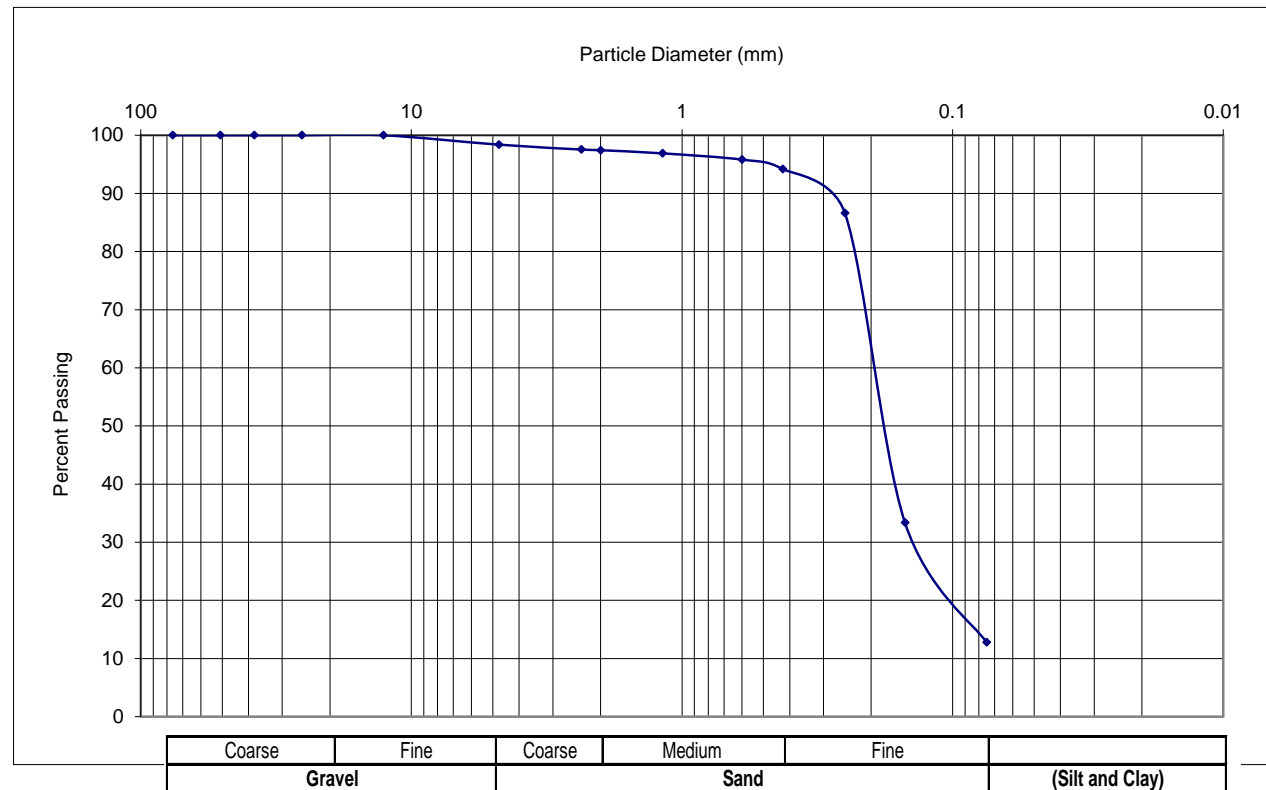
Date: December 2, 2017
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 5
Boring Number: RF-B-6A Depth of Sample: 9.5'-11'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	100.0
3/4	19.05	100.0
3/8	9.525	100.0
#4	4.75	98.4
#8	2.36	97.5
#10	2	97.4
#16	1.18	96.9
#30	0.6	95.8
#40	0.425	94.2
#50	0.3	86.6
#100	0.15	33.4
#200	0.075	12.8



Remarks: Gravel 1.6 % Sand 85.6 %
Passing #200 Sieve (Silt & Clay) 12.8 %

Performed by: BB

Reviewed by: E. Jeske, PE

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Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

Project Name: Great Water Alliance
Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

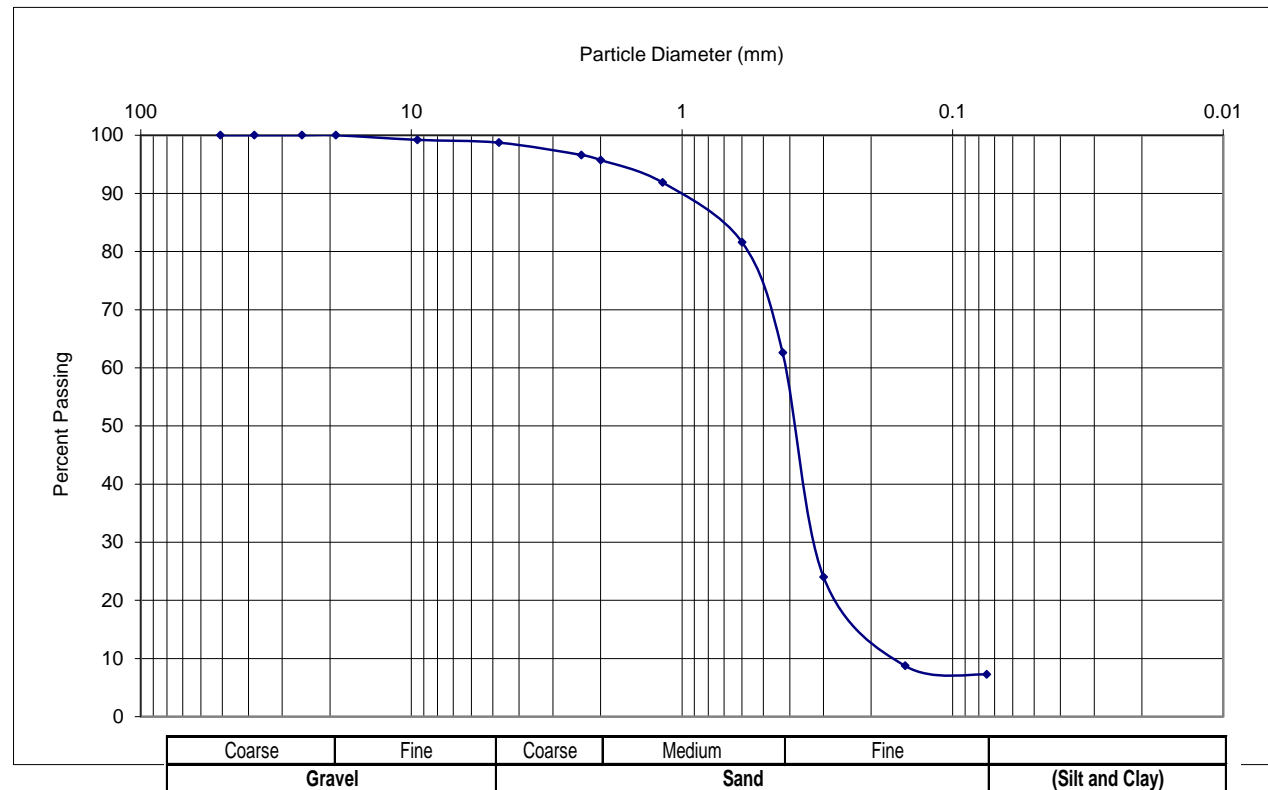
Date: January 24, 2018
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 3
Boring Number: RF-B-7 Depth of Sample: 4.5'-6'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	100.0
3/4	19.05	100.0
3/8	9.525	99.2
#4	4.75	98.7
#8	2.36	96.6
#10	2	95.7
#16	1.18	91.9
#30	0.6	81.6
#40	0.425	62.6
#50	0.3	24.0
#100	0.15	8.7
#200	0.075	7.2



Remarks: Gravel 1.3 % Sand 91.5 %
Passing #200 Sieve (Silt & Clay) 7.2 %

Performed by: Kim Starr

Reviewed by: C. Anderson

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Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

Project Name: Great Water Alliance
Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

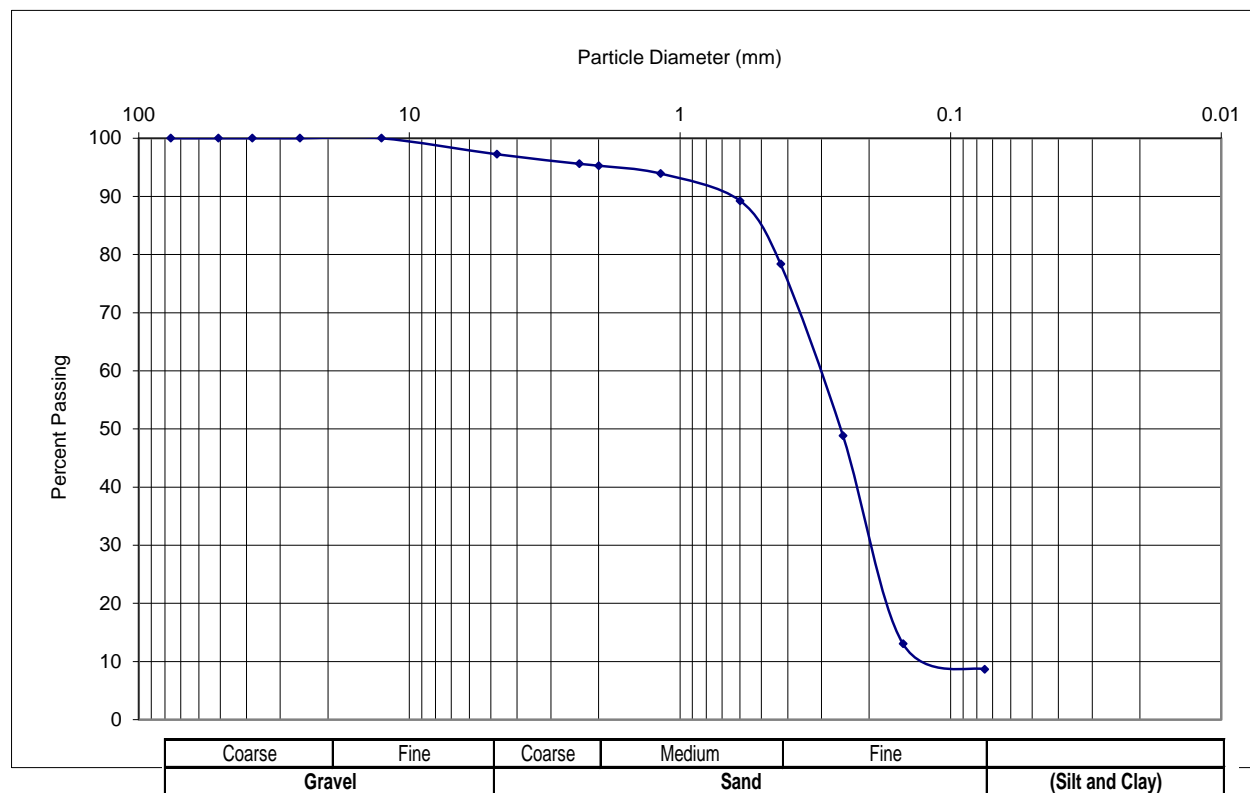
Date: December 2, 2017
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 2
Boring Number: RF-B-9A Depth of Sample: 9.5'-11'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	100.0
3/4	19.05	100.0
3/8	9.525	100.0
#4	4.75	97.2
#8	2.36	95.6
#10	2	95.3
#16	1.18	93.9
#30	0.6	89.2
#40	0.425	78.4
#50	0.3	48.9
#100	0.15	13.0
#200	0.075	8.6



Remarks: Gravel 2.8 % Sand 88.6 %
Passing #200 Sieve (Silt & Clay) 8.6 %

Performed by: BB

Reviewed by: E. Jeske, PE

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Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

Project Name: Great Water Alliance
Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

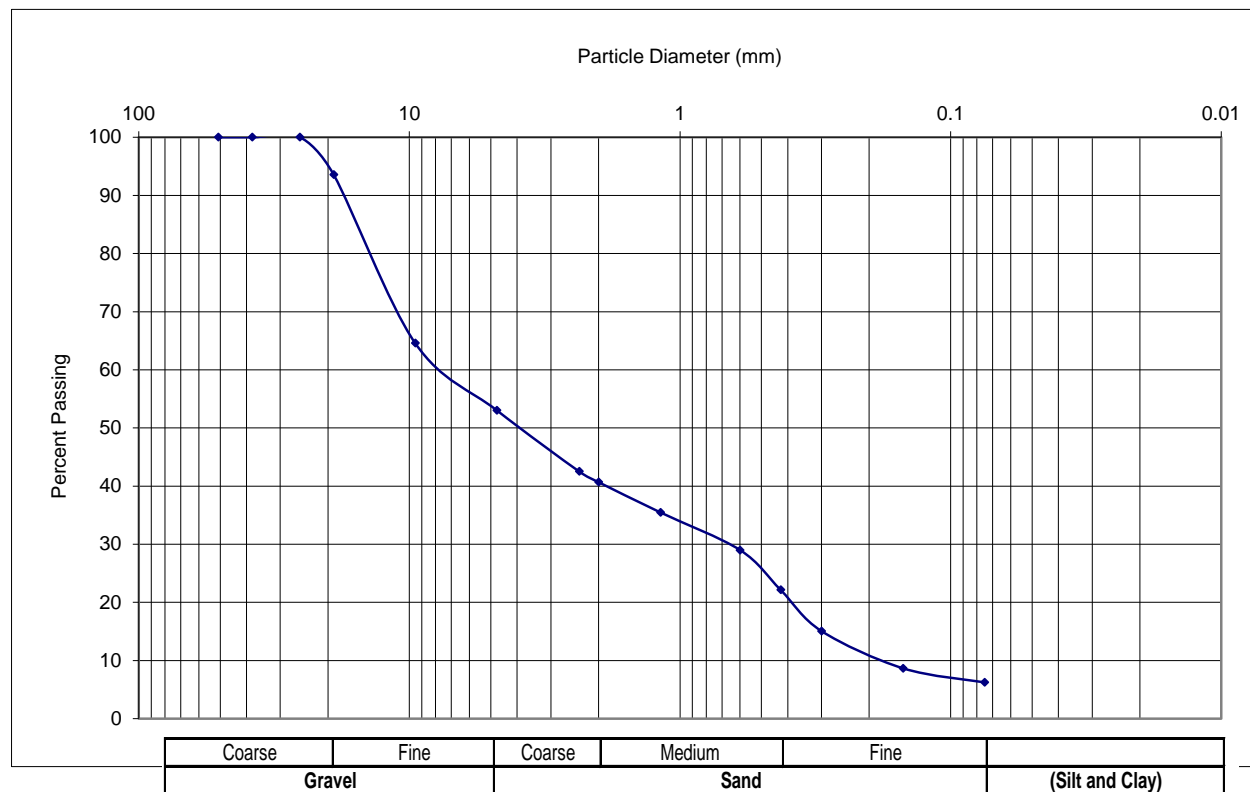
Date: January 23, 2018
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 3
Boring Number: RF-B-11 Depth of Sample: 4.5'-6'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	100.0
3/4	19.05	93.6
3/8	9.525	64.6
#4	4.75	53.0
#8	2.36	42.5
#10	2	40.7
#16	1.18	35.5
#30	0.6	29.0
#40	0.425	22.1
#50	0.3	15.1
#100	0.15	8.7
#200	0.075	6.2



Remarks: Gravel 47.0 % Sand 46.8 %
Passing #200 Sieve (Silt & Clay) 6.2 %

Performed by: Kim Starr

Reviewed by: C. Anderson

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Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

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Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

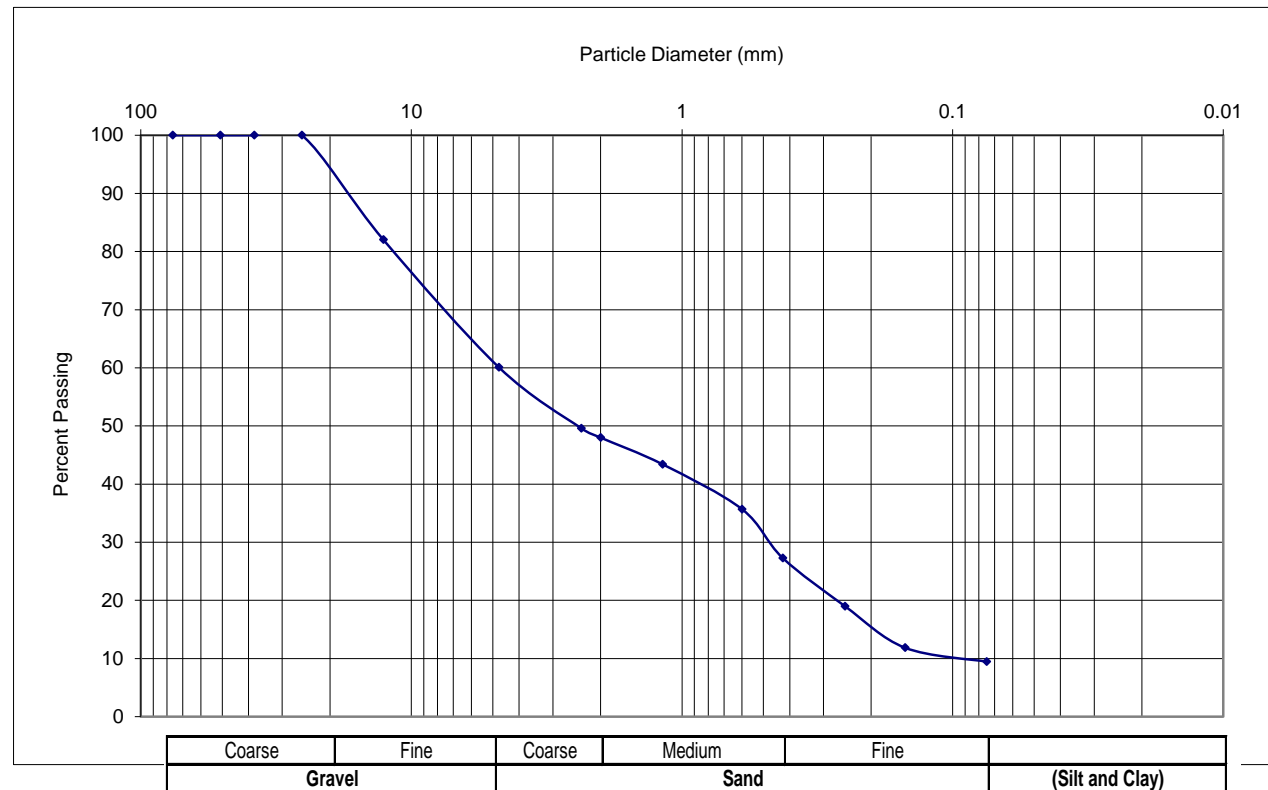
Date: December 2, 2017
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 5
Boring Number: RF-B-15 Depth of Sample: 9.5'-11'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	100.0
3/4	19.05	100.0
3/8	9.525	82.0
#4	4.75	60.1
#8	2.36	49.6
#10	2	48.0
#16	1.18	43.4
#30	0.6	35.7
#40	0.425	27.3
#50	0.3	19.0
#100	0.15	11.9
#200	0.075	9.5



Remarks: Gravel 39.9 % Sand 50.6 %
Passing #200 Sieve (Silt & Clay) 9.5 %

Performed by: BB

Reviewed by: E. Jeske, PE

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Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

Project Name: Great Water Alliance
Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

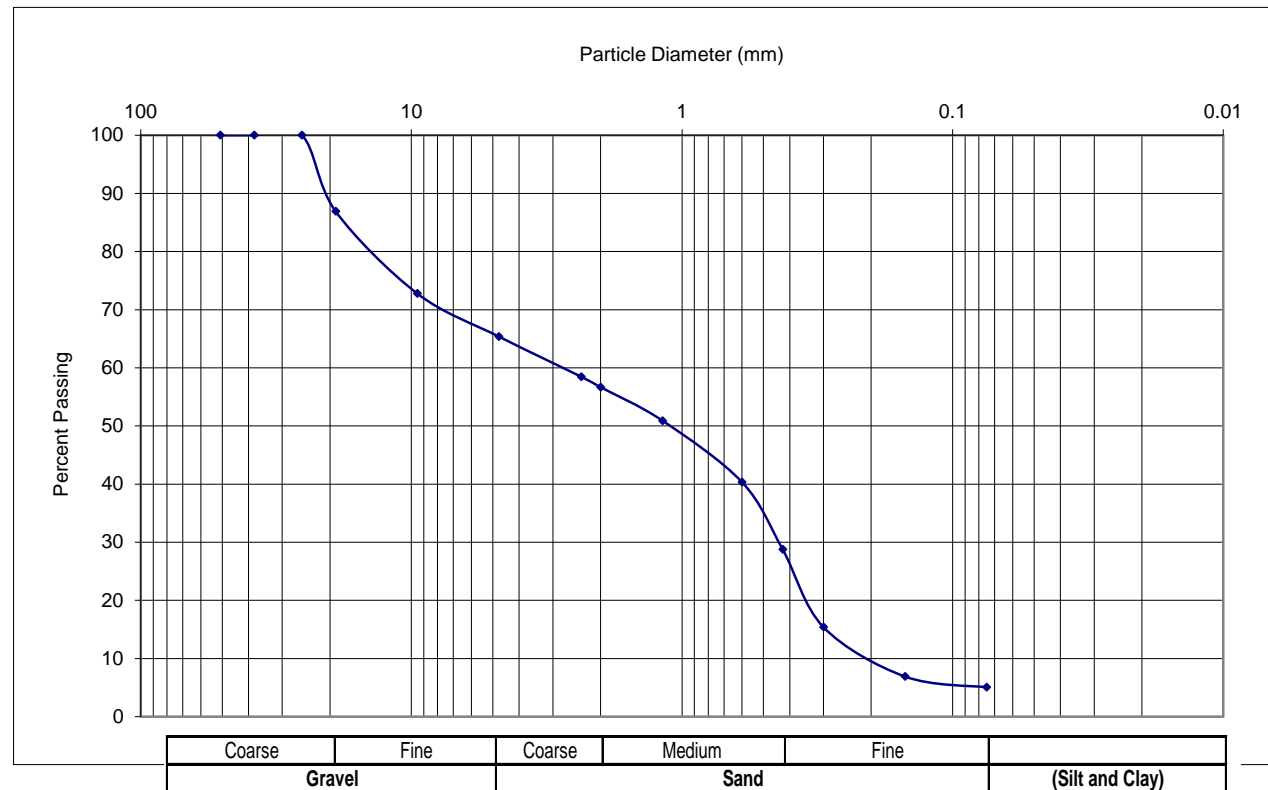
Date: January 24, 2018
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 4
Boring Number: RF-B-17 Depth of Sample: 7'-8.5'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	100.0
3/4	19.05	86.9
3/8	9.525	72.8
#4	4.75	65.4
#8	2.36	58.5
#10	2	56.7
#16	1.18	50.9
#30	0.6	40.3
#40	0.425	28.8
#50	0.3	15.4
#100	0.15	6.9
#200	0.075	5.1



Remarks: Gravel 34.6 % Sand 60.3 %
Passing #200 Sieve (Silt & Clay) 5.1 %

Performed by: Kim Starr

Reviewed by: C. Anderson

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Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

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Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

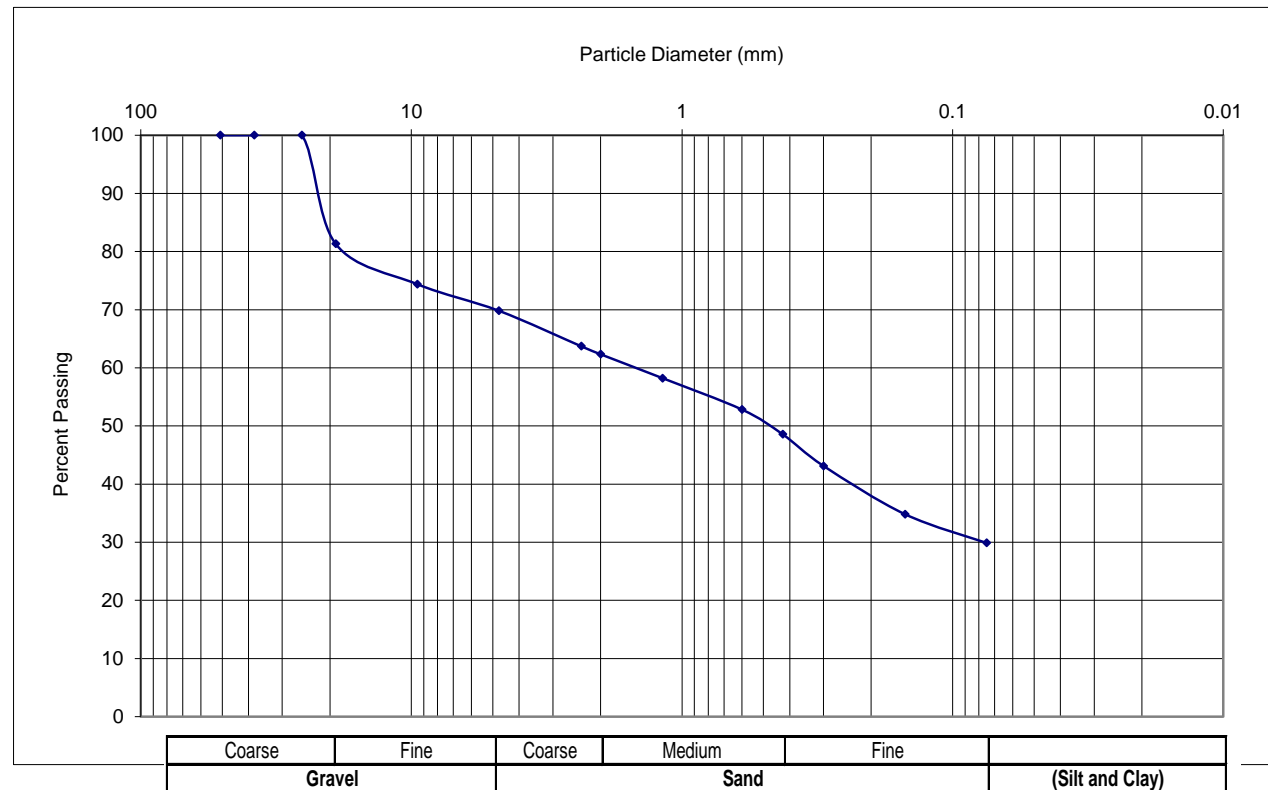
Date: January 24, 2018
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 2
Boring Number: RF-B-23 Depth of Sample: 2'-3.5'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	100.0
3/4	19.05	81.3
3/8	9.525	74.4
#4	4.75	69.8
#8	2.36	63.7
#10	2	62.3
#16	1.18	58.2
#30	0.6	52.8
#40	0.425	48.6
#50	0.3	43.1
#100	0.15	34.8
#200	0.075	29.9



Remarks: Gravel 30.2 % Sand 39.9 %
Passing #200 Sieve (Silt & Clay) 29.9 %

Performed by: Kim Starr

Reviewed by: C. Anderson

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Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

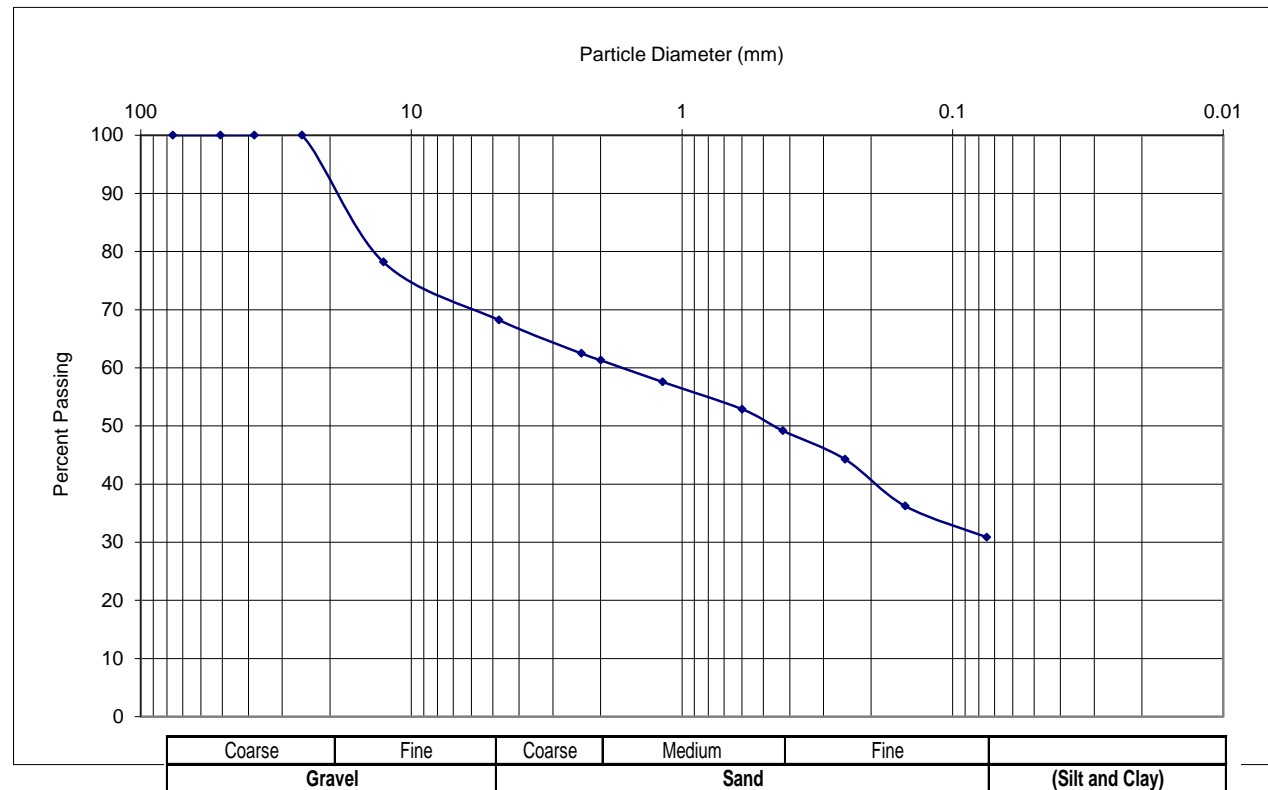
Date: December 2, 2017
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 5
Boring Number: RF-B-23 Depth of Sample: 9.5'-11'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	100.0
3/4	19.05	100.0
3/8	9.525	78.2
#4	4.75	68.2
#8	2.36	62.5
#10	2	61.3
#16	1.18	57.6
#30	0.6	52.9
#40	0.425	49.2
#50	0.3	44.3
#100	0.15	36.2
#200	0.075	30.9



Remarks: Gravel 31.8 % Sand 37.3 %
Passing #200 Sieve (Silt & Clay) 30.9 %

Performed by: BB

Reviewed by: E. Jeske, PE

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Project Name: Great Water Alliance
Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

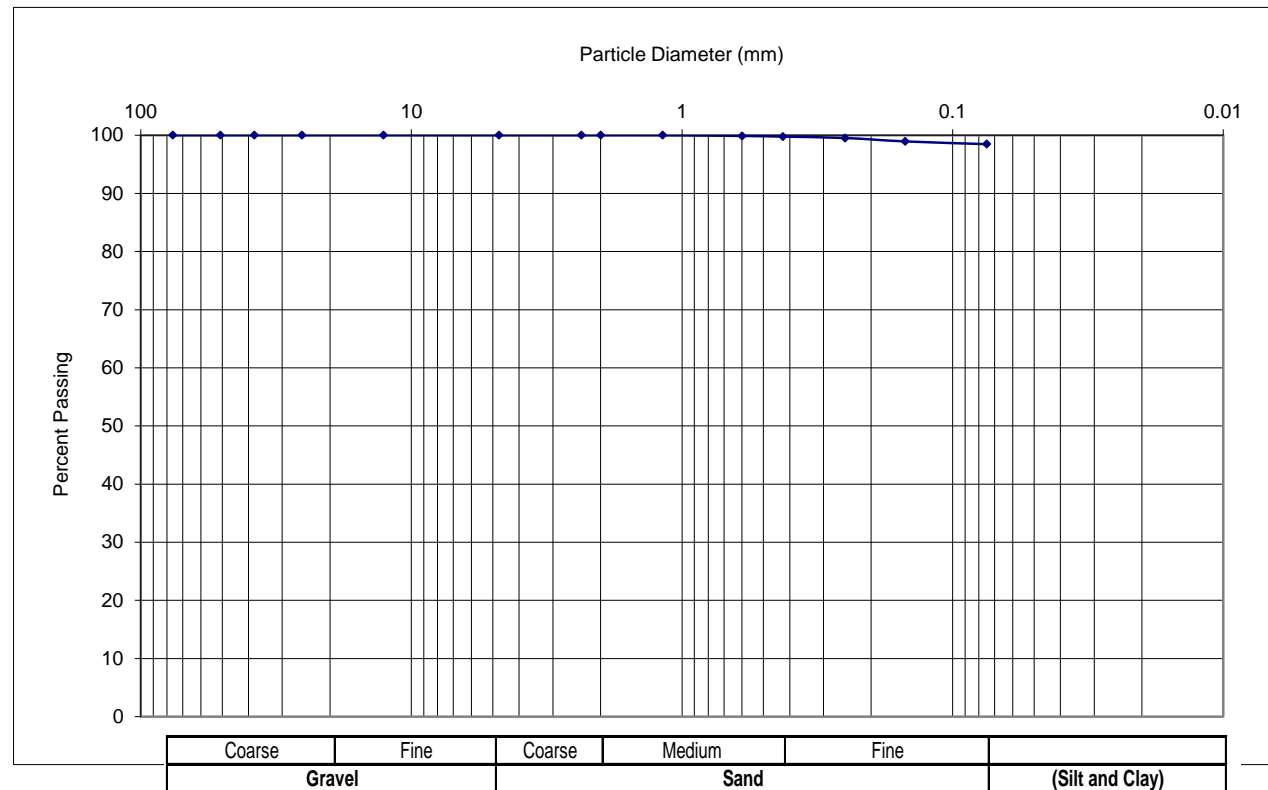
Date: December 2, 2017
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 5
Boring Number: RF-B-27 Depth of Sample: 9.5'-11'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	100.0
3/4	19.05	100.0
3/8	9.525	100.0
#4	4.75	100.0
#8	2.36	100.0
#10	2	100.0
#16	1.18	100.0
#30	0.6	99.9
#40	0.425	99.8
#50	0.3	99.5
#100	0.15	98.9
#200	0.075	98.5



Remarks: Gravel 0.0 % Sand 1.5 %
Passing #200 Sieve (Silt & Clay) 98.5 %

Performed by: BB

Reviewed by: E. Jeske, PE

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Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

Project Name: Great Water Alliance
Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

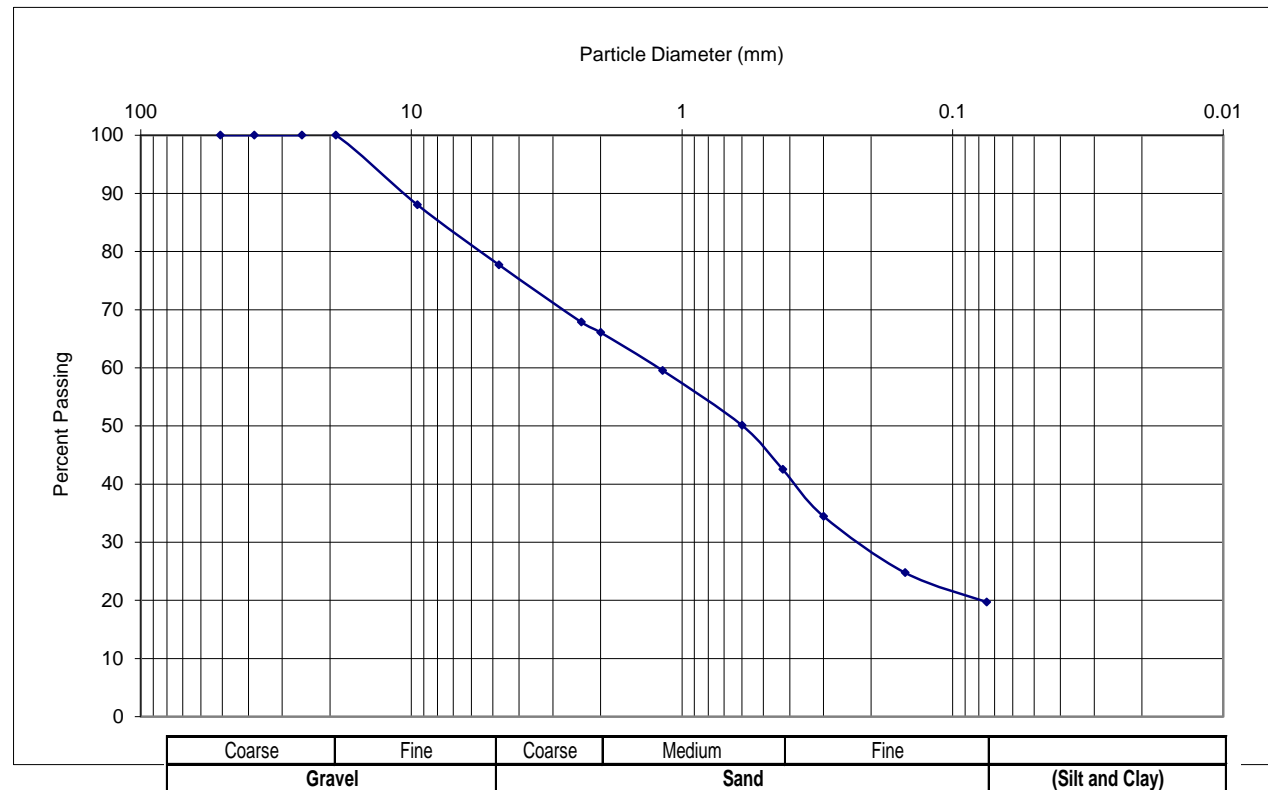
Date: January 12, 2018
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 2
Boring Number: RF-B-28 Depth of Sample: 2'-3.5'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	100.0
3/4	19.05	100.0
3/8	9.525	88.1
#4	4.75	77.7
#8	2.36	67.9
#10	2	66.1
#16	1.18	59.5
#30	0.6	50.1
#40	0.425	42.5
#50	0.3	34.5
#100	0.15	24.8
#200	0.075	19.7



Remarks: Gravel 22.3 % Sand 58.0 %
Passing #200 Sieve (Silt & Clay) 19.7 %

Performed by: Kim Starr

Reviewed by: C. Anderson

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Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

Project Name: Great Water Alliance
Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

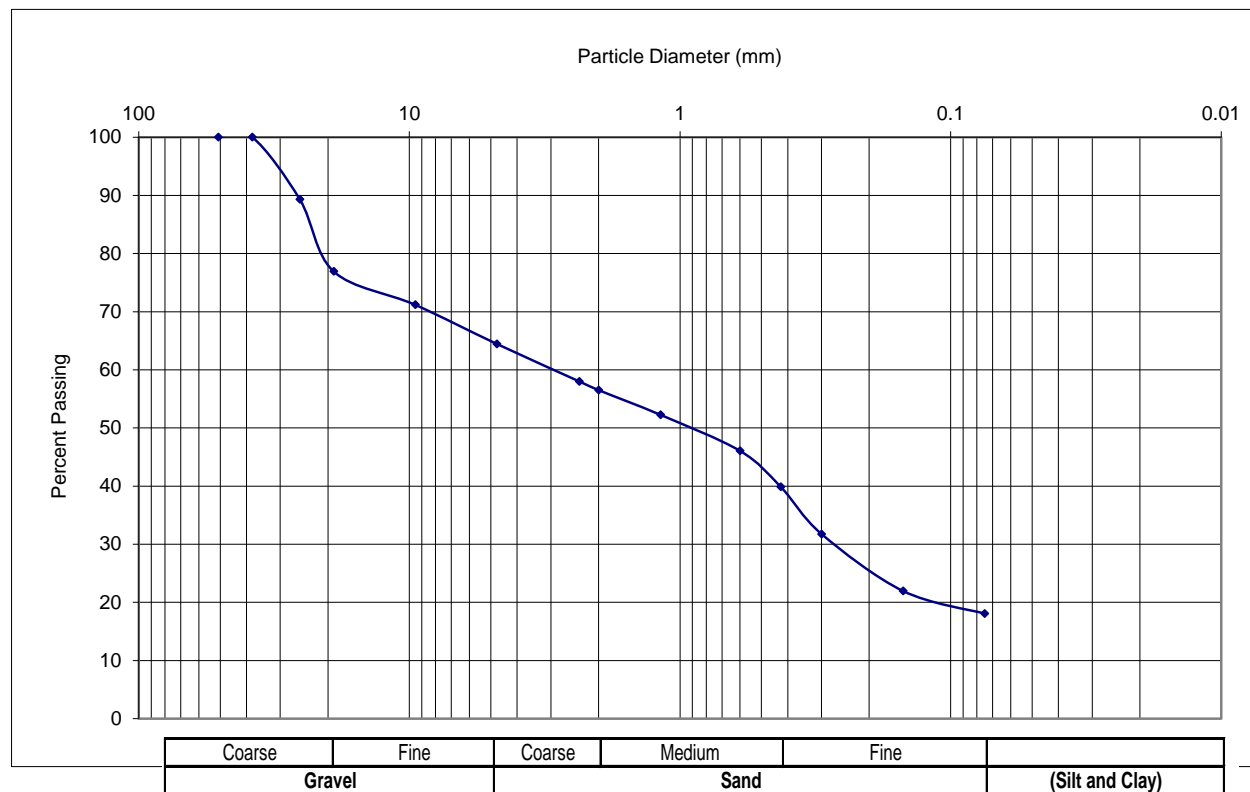
Date: January 23, 2018
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 2
Boring Number: RF-B-31 Depth of Sample: 2'-3.5'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	89.3
3/4	19.05	76.9
3/8	9.525	71.2
#4	4.75	64.4
#8	2.36	58.0
#10	2	56.5
#16	1.18	52.2
#30	0.6	46.0
#40	0.425	39.9
#50	0.3	31.8
#100	0.15	22.0
#200	0.075	18.1



Remarks: Gravel 35.6 % Sand 46.3 %
Passing #200 Sieve (Silt & Clay) 18.1 %

Performed by: Kim Starr

Reviewed by: C. Anderson

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Laboratory Test Results of Mechanical Analysis of Soil or Aggregate

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Project Number: 17016-10
Project Location: Waukesha Co., WI
ASTM Designation: C136, D422

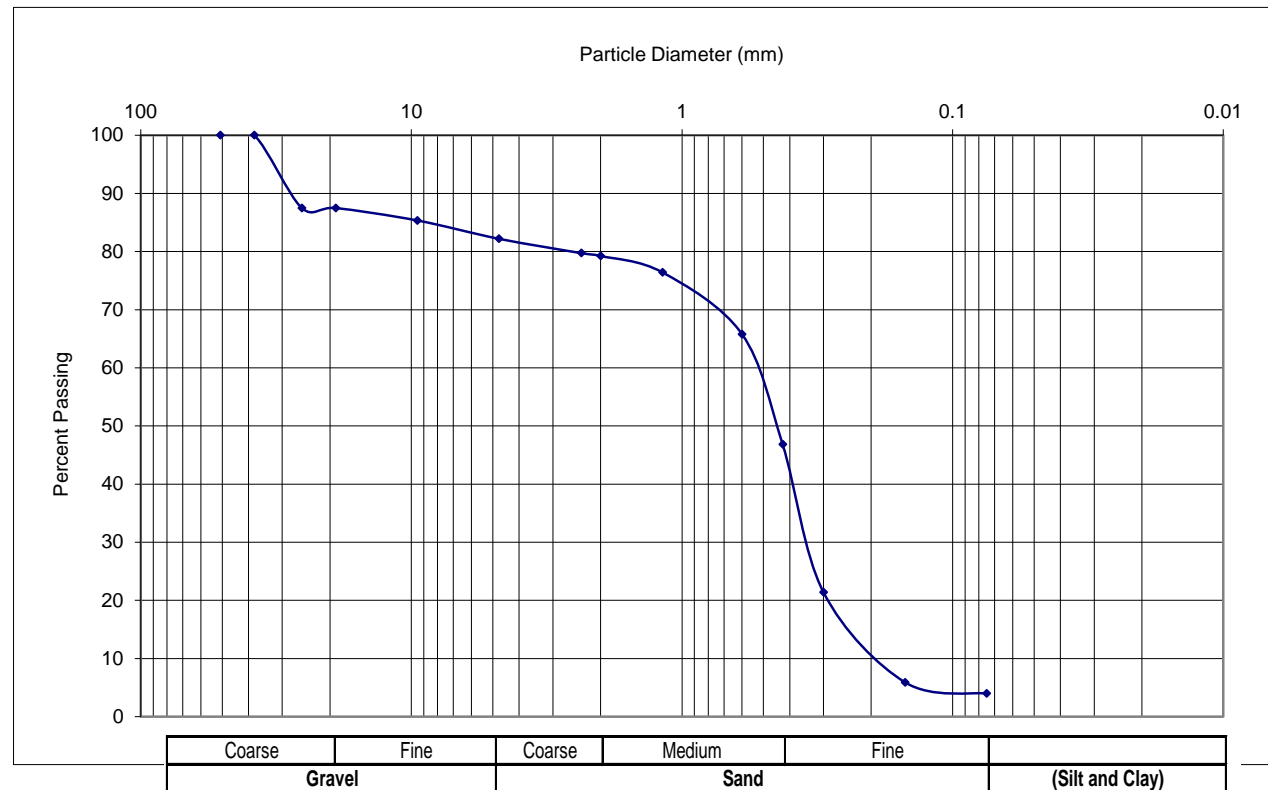
Date: January 23, 2018
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 3
Boring Number: RF-B-33 Depth of Sample: 4.5'-6'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	87.5
3/4	19.05	87.5
3/8	9.525	85.4
#4	4.75	82.2
#8	2.36	79.7
#10	2	79.2
#16	1.18	76.4
#30	0.6	65.8
#40	0.425	46.9
#50	0.3	21.4
#100	0.15	5.9
#200	0.075	4.0



Remarks: Gravel 17.8 % Sand 78.2 %
Passing #200 Sieve (Silt & Clay) 4.0 %

Performed by: Kim Starr

Reviewed by: C. Anderson

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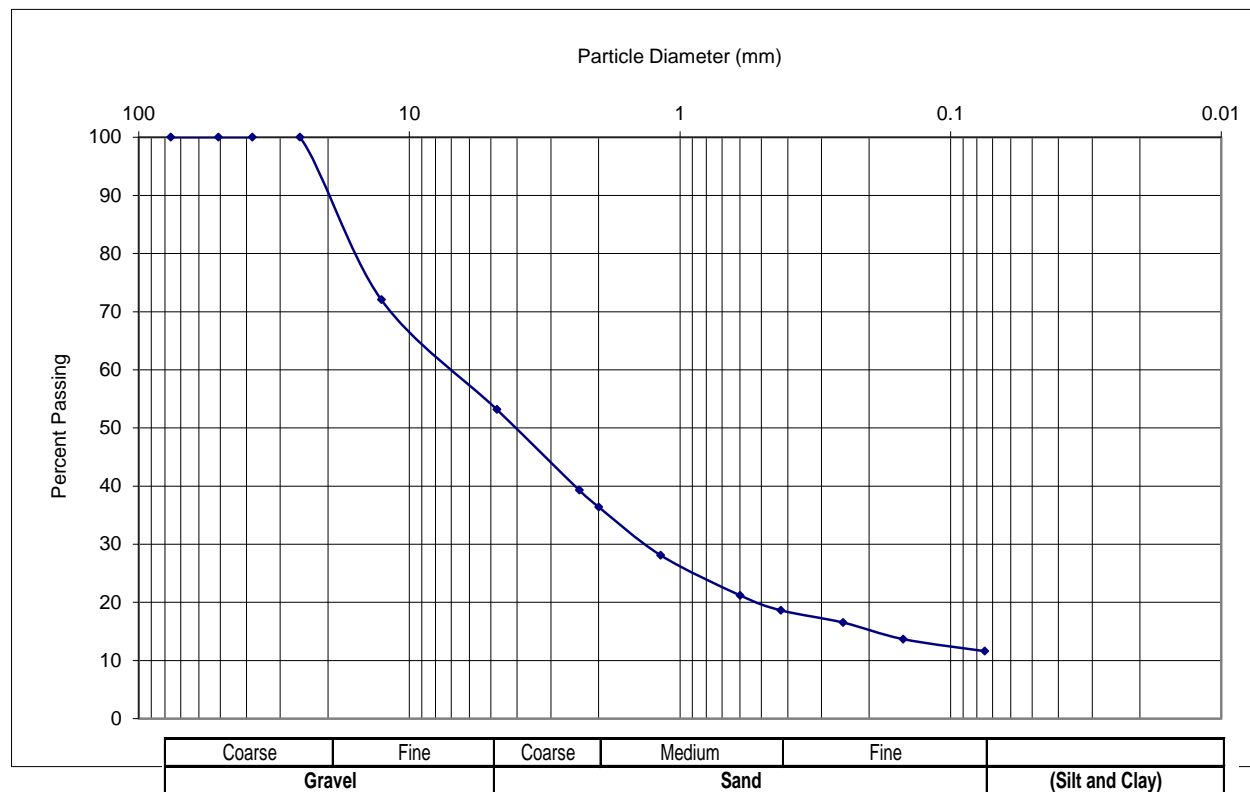
Date: December 2, 2017
Reported To: Greeley & Hansen

Sample Information

Type of Sample: Split Spoon Sample Number: 5
Boring Number: RF-B-34 Depth of Sample: 9.5'-11'

Mechanical Analysis Data

Sieve	Sieve Opening (mm)	Percent Passing (%)
2	50.8	100.0
1 1/2	38.1	100.0
1	25.4	100.0
3/4	19.05	100.0
3/8	9.525	72.1
#4	4.75	53.2
#8	2.36	39.3
#10	2	36.4
#16	1.18	28.1
#30	0.6	21.2
#40	0.425	18.6
#50	0.3	16.5
#100	0.15	13.7
#200	0.075	11.6



Remarks: Gravel 46.8 % Sand 41.6 %
Passing #200 Sieve (Silt & Clay) 11.6 %

Performed by: BB

Reviewed by: E. Jeske, PE

GESTRA Engineering, Inc.



Appendix E – Estimated Station Limits for Geotextile Placement



(NO TEXT FOR THIS PAGE)

Approximate Station *	Approximate Length (ft)	Borings in Area	Issues	Type
00+00 to 1+50	150	RFPS-B-2, RFPS-B-3	Groundwater likely to be encountered around the pipe bedding material in sand and silt layers	Surrounding Bedding on All Sides
27+40 to 63+80	3,640	RF-B-4, RF-B-5, RF-B-6, RF-B-6A, RF-B-7, RF-B-8, LG-B-4, LG-B-5, LG-B-6, and RA-B-1	Groundwater likely to be encountered around the pipe bedding material in sand and silt layers	Surrounding Bedding on All Sides
115+50 to 146+00	3,050	RF-B-15, RF-B-16, RF-B-17, RF-B-18, and RF-B-19	Groundwater likely to be encountered around the pipe bedding material in sand	Surrounding Bedding on All Sides
186+00 to 206+20	2,020	RF-B-28, RF-B-29, RF-B-30, and RF-B-30A	Groundwater likely to be encountered at shallow depth, pipe bedding adjacent to wet silt, with layers of organic soils possible above the bedding	Surrounding Bedding on All Sides, and also Along Trench Sides Above Bedding
218+60 to 223+40	480	RF-B-33 and RF-B-34	Groundwater likely to be encountered above the pipe bedding material in sand	Surrounding Bedding on All Sides

* Stationing was approximated by estimating that poor conditions at one boring will end at about the midpoint between this boring and the adjacent boring with suitable conditions. The stationing also excludes any areas of trenchless excavation.

Notes: Any unsuitable soils present below the utility bearing elevation must be over-excavated and replaced with additional bedding materials as recommended in the geotechnical report. A representative of the project geotechnical engineer should be present during construction to help determine necessary over-excavation depths and appropriate backfill methods and materials. The above recommended areas for a geotextile surrounding the bedding have been estimated based on locations where the pipe is anticipated to be below the groundwater and the following relationships between the bedding and/ or backfill and adjacent soils are **not** met: $D_{15}^B/D_{85}^A \leq 5$, $D_{50}^B/D_{50}^A \leq 25$, and $D_{15}^B/D_{15}^A \leq 20$, where "B" represents the bedding or backfill material, "A" represents the adjacent in-situ soils, and D_x is the diameter for which x percent is finer by weight. Where these relationships are met, migration of fines is not considered to be an issue. In general, where the bedding material consist of 3/4-inch limestone chips meeting the gradation requirements of the Standard Specifications for Sewer and Water Construction in Wisconsin Table 33, in-situ soils not estimated to meet the above relationships include fine to medium sand, silty sand, and silt. These relationships are based on the Army Corps of Engineers as provided in their Filter Experiments and Design Criteria Technical Memorandum No. 3-360.

(NO TEXT FOR THIS PAGE)

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Waukesha, WI 53186

Appendix V

4-220 D9 Geotechnical Report, Contract Package 5,
Return Flow Pipeline Stations
2000+00 to 3000+00

(NO TEXT FOR THIS PAGE)

Great Lakes Water Supply Program



DRAFT

4-220 D9 Geotechnical Report, Contract Package 5, Return Flow Pipeline Stations 2000+00 to 3000+00

February 2019



(NO TEXT FOR THIS PAGE)

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PROGRAM TEAM MEMBER CONSULTANTS:



EXECUTIVE SUMMARY

This geotechnical report presents and evaluates the subsurface conditions encountered at the borings performed for the Great Water Alliance (Program) Contract Package 5, Return Flow Pipeline Stations 2000+00 to 3000+00. Borings from the area of about Station 2160+00 to 2272+00 had not yet been performed at the time of this report preparation but will be provided upon completed in a revision to this report. The purpose of this report is to evaluate the subsurface conditions encountered and provide recommendations regarding the design and construction of the Return Flow Pipeline within the above portion of Contract Package 5.

The subsurface conditions encountered within the borings performed for this portion of Contract Package 5 are generally considered to be suitable for installation of the Return Flow Pipeline by the open cut and trenchless methods proposed. However, several challenges are anticipated which may result in areas of difficult installation, additional preparations such as temporary dewatering and over-excavation, and possible alternative construction methods.

Temporary groundwater control will be necessary in some open cut trench areas. Areas of shallow groundwater were encountered within various borings along Racine Avenue. At borings CC-B-91, 93, 95, 101, 104, 105, 109, and 110, the water encountered during drilling was above the estimated invert elevations. Where excavations extend into small volumes of perched groundwater or only several inches into the groundwater, the use of sumps with filtered pumps should generally be suitable to control the water for installation and proper backfilling. However, where excavations extend below the groundwater more than a few inches, or into larger perched volumes, dewatering with a series of sumps or well points, along with high capacity pumps, or other more comprehensive methods, may be necessary.

In open cut areas, excavation difficulty due to very dense (standard penetration N-values of 50+ blows per foot) granular soils with possible cobbles and boulders, will be encountered in areas (such as near borings CC-B-72, 91, 92, 94, 95, 100, 107, and 108) possibly resulting in greater time for excavation and the need to use specialized excavation methods such as ripping. Most of the areas of very dense soils, and the thickest layers of very dense soils, were located along Racine Avenue in the City of New Berlin, where the soils consisted of natural silty sand, sandy silt, or sand with varying gravel content and possible cobbles and boulders. The borings within proposed trenchless construction areas generally indicated the presence of natural lean clay, dense sandy silt and gravel, or hard sandy lean clay fill near estimated invert elevations. The presence of cobbles or boulders may make drilling/boring difficult in at least some areas. Where jack and bore methods will be used, the presence of large cobbles and/or boulders could halt the boring operations. Depending on the size and type of cobbles or boulders, a halt of operations could possibly require redirecting the drilling path or choosing an alternative alignment of the pipeline. Horizontal Directional Drilling (HDD) methods are typically capable of extending through cobbles, boulders, and even some bedrock when proper methods are utilized.

In open cut areas where organic, unstable, or otherwise unsuitable subgrade soils are encountered, these soils must be removed and replaced. At least some over-excavation of the pipeline subgrade is expected to be necessary in open cut areas, especially where organic soils or loose, soft, or wet existing fill/natural soils are present at/near the planned invert elevation. In the area of CC-B-96, 101, 109, and 110, potentially soft or loose natural soils may be present at the pipe invert elevation, requiring limited over-excavation and replacement with addition bedding materials. In trenchless installation areas, loose, soft, wet, or organic soils may result in the development of voids which must be properly grouted after installation. Therefore, it is generally recommended that trenchless installation runs be directed below these types of soils.

Depending upon the pipe material used for the Program, corrosion protection may be necessary in at least some areas of this portion of Contract Package 5. Laboratory corrosivity testing results for steel pipe/ductile iron pipe (DIP) are included in **Appendix C**. A more detailed description of the subsurface conditions encountered at the borings and recommendations for open cut and trenchless methods of installation are presented in this report.

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SECTION 1 Introduction

1.1 Program Description

The Great Water Alliance (Program) includes a Water Supply Pipeline with pumping facilities, water reservoirs, and chemical treatment that will deliver potable water to the City of Waukesha (Waukesha) from a connection to a water system supplied with Lake Michigan water. A comparable length of a Return Flow Pipeline with pumping facilities located at Waukesha's Clean Water Plant (CWP) is required to discharge highly treated effluent to the Root River (outfall location in the City of Franklin), which ultimately discharges into Lake Michigan.

In January 2018, the Draft Route Study: Oak Creek (DEL 4-100 D1) was completed. The study evaluated three route alternatives and identified a preferred route alternative. The route alternatives included both the Water Supply and Return Flow Pipelines with a water supply connection to the City of Oak Creek (Oak Creek). In certain segments along the route alternatives, the Water Supply and Return Flow Pipelines were aligned in the same corridor. In these segments, the alignment was referred to as the Oak Creek Common Corridor. The Program has been segregated into six contract packages: Contract Packages 1 through 6, with Contract Package 6 previously representing the Oak Creek Common Corridor. Refer to the Draft Geotechnical Soil Analysis Technical Memorandum, Contract Package 6 (DEL 4-220 D2) for details on the desktop evaluation performed for the Oak Creek Common Corridor. Due to a change in the anticipated water supplier, the contract packages have been restructured, with portions of the prior designated Oak Creek Common Corridor becoming part of Contract Package 5. The purpose of this report is to evaluate subsurface conditions encountered and provide recommendations regarding the construction of the Return Flow Pipeline within the area of Contract Package 5, Stations 2000+00 to 3000+00. As an exception, drilling in the general area of Stations 2160+00 to 2272+00 had not been completed at the time of this report preparation. Results of the exploration in this area will be provided at a later date upon completion, in a revision to this report. This geotechnical report is specific to Contract Package 5, Station 2000+00 to 3000+00.

The Return Flow Pipeline within Contract Package 5, Station 2000+00 to 3000+00 is to be 30-inch diameter ductile iron pipe (DIP) which is polyethylene encased. As an exception, the pipeline within horizontal directional drilling (HDD) areas, will consist of 36-inch diameter high-density polyethylene (HDPE). Most of the alignment in this portion of Contract Package 5 will employ open cut excavation methods with a minimum depth of cover over the top of pipe of 6.5-feet. Where installation is performed within pavement areas, Select Fill will be used to backfill up to one-foot above the top of the pipe, followed by slurry backfill or Select Fill up to the bottom of the existing pavement section. Below landscape areas, Select Fill will be used to backfill up to one-foot above the pipe followed by Common Fill up to the bottom of the existing topsoil. Specifications for Select and Common Fill are provided in the Program Specifications.

This portion of Contract Package 5 starts at the end of Contract Package 2, which is at about 340-feet southeast of Swartz Road, on the southwest side, at Station 2000+00. The alignment proceeds southeast to about Station 2018+10 where it crosses to the northeast side of Racine Avenue. At about Station 2039+50, the alignment crosses back to the southwest side of Racine Avenue and continues south to about Station 2159+50, where it crosses Racine Avenue and heads east and northeast along the north side of Interstate 43 to about Station 2269+25. At this point the alignment heads southeast across Interstate 43 and then east and south along the property boundary near 16430 W. Small Road. The alignment then proceeds northeast along the south side of Small Road to about 300-feet southwest of Westridge Road, where this portion of Contract Package 5 ends and Contract Package 6 begins. The Contract

Drawings included in the Contract Documents show the approximate location of the proposed alignment and the approximate boring locations.

The estimated parameters that are the basis for the analysis performed in this geotechnical report are indicated in **Table 1-1**.

Table 1-1 Program Parameters

Design Parameter	Value
Pipe material	DIP in open cut and Jack and Bore areas; HDPE in HDD areas
Minimum depth of cover	6.5-feet
Return Flow Pipe diameter	30-inches for DIP; 36-inches for HDPE
Bedding material thickness	Minimum of 6-inches
Minimum trench width	4.5-feet
Backfill depth of Select Fill	Minimum of one-foot above pipe
Type of backfill above Select Fill	Slurry/Select Fill and Common Fill for pavement and landscape areas, respectively

Most areas of this portion of Contract Package 5 will be installed by traditional open cut trench methods. However, trenchless methods are planned to be used in several areas. Trenchless jack and bore (casing) methods are planned for some road and highway crossings to prevent road closure which is otherwise necessary for traditional open cut methods. HDD is planned to cross some wetlands and waterways, where open cut methods would not be feasible or permissible. **Table 1-2** indicates the areas where trenchless installation is planned, the borings performed in these areas, the trenchless methods planned, and the project stationing at the beginning and ending of the installation.

Table 1-2 Summary of Trenchless Installation Areas

Obstacle	Roadway	Stationing	Boring(s)	Trenchless Method Proposed
Interstate 43	Property North of Small Road	2269+41 to 2272+06	CC-B-73, B-74*	Jack and Bore
Small Unnamed Creek	I-43	2215+50 to 2219+49	CC-B-80*, B-81*	HDD
Small Unnamed Creek	I-43	2179+36 to 2183+31	CC-B-86*, B-87*	HDD
Racine Avenue	Racine Avenue	2159+54 to 2161+19	CC-B-89A*, B-90	Jack and Bore

* Borings not yet performed at the time of this report preparation

The areas of jack and bore require auger boring where an entry and exit pit are excavated at either end of the obstacle, such as a road crossing. Augers within casing are attached to the boring machine with a lead cutting head. The auger string is rotated, and a lubricating fluid is pumped into the borehole, returning the soil cuttings, and creating a hole which is protected by the casing which is advanced by hydraulic jacks simultaneously with the boring process. The boring machine advances each section as it moves along a track within the entry pit. As each section is

advanced, the machine is detached from the augers and casing, another section is welded onto the string and the process is repeated until reaching the receiving pit. HDD is a steerable drilling process where the direction of the bit advancement can be controlled and monitored throughout the process. An inclined surface rig first drills a small pilot hole with a drilling fluid that helps remove cuttings and stabilize the hole. The hole is then reamed to a diameter of 120 to 150% of the outside diameter of the pipe to be installed to allow for the curvature of the pipe and to allow for the return of spoils within the annular space. After reaming, the product pipe is attached to the drill pipe at the opposite end of the drill and pulled back through the hole.

1.2 Regional Geology

Contract Package 5 includes areas in Waukesha County. The soils and geography in this county were generally formed by the advancement of glaciers, as was most of Southeastern Wisconsin. The soils remaining after the glaciers moved through are primarily local bedrock materials, or materials from the north of this county carried by the movement of the glaciers. A majority of the soils in the areas of this county consist of glacial till, which is a mixture of different soil types, including crushed materials. The till ranges from a sandy loam with gravel and cobbles to silty clay with trace gravel. The thickness of these soils over the primarily dolomite bedrock ranges from a few inches to several hundred feet. The bedrock elevation in Waukesha County ranges from about 500- to 900-feet above mean sea level (MSL), and generally drops from west to east at a rate of about 10-feet for every mile.

1.3 Scope of Work

PSI has performed the following services for the southeastern segment of Contract Package 5 of the Program:

- Contacted Digger's Hotline to identify public utilities at/near the boring locations;
- Provided staking and coordinated access for field staking, utility locates, and survey. The as-drilled boring locations and ground surface elevations were determined by the surveyor for the Program team, for inclusion in the Geotechnical Soil Analysis Report;
- Standard Penetration Test (SPT) borings were drilled at approximate 1,000-foot intervals to planned depths of 20-feet below grade in areas planned for open cut installation. In trenchless jack and bore (casing) areas of the alignment, soil borings were performed to a planned depth of 20-feet. In trenchless HDD portions of the alignment, soil borings were performed to a planned 40-foot depth. Soil samples were typically collected at 2.5-foot intervals to a depth of 15-feet, then at 5-foot intervals thereafter;
- At each boring performed, the seasonal high groundwater elevation was estimated;
- All borings were abandoned with bentonite in accordance with WDNR requirements;
- The thickness of the pavement section within borings performed at approximate one-mile intervals was estimated;
- Modified Proctor testing (ASTM D1557) was performed on several bulk samples obtained from borings performed along the alignment, above the approximate invert elevation for use in testing the Common Fill materials during backfilling of the open cut trenches during construction;
- Grainsize analyses by mechanical (ASTM D6913) and hydrometer (ASTM D7928) methods, Atterberg Limits testing (ASTM D4318), and organic content testing by Loss-on-Ignition (ASTM D7348) were performed on several samples above the invert elevation for evaluation for potential reuse as Common Fill as specified in the Program Specifications; and
- Corrosivity testing was performed by specialty corrosion testing laboratories for corrosion parameters testing on samples obtained near the pipe invert elevation at approximate 2,000-foot intervals. PSI subcontracted

both SoilCor Corrosion and Thermal Sciences, and Testing Engineers International (TEI) to perform ten-point corrosion testing (for DIP corrosion evaluation).

The total number of borings included in the scope of Contract Package 5, Return Flow Pipeline Station 2000+00 to 3000+00 was 43, including CC-B-70 through 81, 81A, 82 through 89, 89A, and 90 through 110. It should be noted however, that CC-B-74 through B-89A had not yet been performed during the preparation of this report but will be included in a revision to this report upon completion. The boring logs are included in **Appendix A**.

Some borings planned to be performed in pavement areas were offset to areas outside of the pavement as requested by the municipality or permitting body. When possible, as-built plans were obtained in order to estimate pavement section thicknesses in these areas. In addition, some borings were offset from landscape areas to the pavement, where steep slopes made access infeasible even with the all-terrain vehicle (ATV) track-mounted drill rig.

1.4 Previous Study

PSI prepared a previous technical memorandum as an appendix for the Draft Route Study: Oak Creek (DEL 4-100 D1) titled Draft Geotechnical Soil Analysis Technical Memorandum, Contract Package 6 (DEL 4-220 D2) that presented existing subsurface information from available public information for the route alternatives that were being considered for the Oak Creek Common Corridor. This technical memorandum evaluated the three route alternatives based on several geotechnical risk potentials. Contractors should review the information presented in this memorandum to use in conjunction with this report to help estimate the means and methods of construction which will be necessary. Information presented in the technical memorandum included several sources as indicated below.

- The US Department of Agriculture/National Soil Conservation Service (USDA/NRCS) Web Soil Survey was reviewed to estimate potential areas of organic soils, shallow perched/apparent groundwater, dense soils, and corrosivity to steel pipe/DIP. Estimated Liquid Limits (LL) and Plasticity Indices (PI) of the cohesive soils were also provided within this source as a range of values.
- Areas of shallow groundwater and shallow bedrock were estimated based on mapping provided by the Southeastern Regional Planning Commission (SEWRPC).
- The WisDOT Highway Structures Information (HSI) system was reviewed for general consistency with the USDA/NRCS Web Soil Survey information.
- Former PSI geotechnical exploration projects in the area of the route alternatives were also reviewed. Where warranted, permission to use information from the past projects can be requested from each individual client.

SECTION 2 Exploration and Testing Procedures

2.1 Layout and Elevation Procedures

Borings were generally performed at 1,000-foot intervals, with additional borings performed near specific trenchless areas. The Program surveyor, Ayres Associates, was responsible for field staking of the borings in the general locations indicated on the Contract Drawings. Ayres Associates also provided the elevations at the ground surface, northings/eastings, and any noted offsets from the planned locations. Ayres offset some of the borings to move them from private property to public property. For ease of interpretation, PSI has rounded the elevations at the borings to the nearest foot. The ground surface elevations at the borings and the northings/eastings are indicated on the boring logs included in **Appendix A**. Where borings were offset by PSI, the elevation at the offset location was approximated relative to the elevation provided at the staked location.

2.2 Field Testing Procedures

The soil test borings were performed with both truck mounted and ATV mounted rotary drilling rigs utilizing continuous flight hollow stem augers to advance the holes. An ATV mounted drill rig was used at boring locations where soft soils, steep slopes, or other access issues for the truck mounted rig were present. Representative samples were obtained by the Standard Penetration Test (SPT) method using split-spoon sampling procedures in general accordance with ASTM D1586 procedures. Samples were collected at 2.5-foot intervals to 15-feet, and at 5-foot intervals thereafter, to the termination depths of the borings. The standard penetration value (N-value) is defined as the number of blows of a 140-pound hammer, falling 30-inches, required to advance the split-spoon sampler one-foot into the soil. The sampler is lowered to the bottom of the drill hole and the number of blows recorded for each of three successive increments of six-inch penetrations. The N-value is obtained by adding the second and third incremental numbers. The SPT provides a means of estimating the relative density of granular soils and comparative consistency of cohesive soils, thereby providing a method of evaluating the relative strength and compressibility characteristics of the subsoils. Upon completion, the borings were backfilled with bentonite. Pavement borings were patched with cold patch asphalt or concrete at the surface, as appropriate. Any damaged grass covered landscape areas at/near the borings that were caused by PSI access to the borings and the boring operations were restored to pre-existing conditions, including seeding and matting, as necessary.

The SPT soil samples were transferred to clean glass jars immediately after retrieval and returned to the laboratory upon completion of the field operations. Samples will be stored for a period of 60-days from the date of this report, at which time they will be discarded unless other instructions are received. All soil samples were visually classified by a soil engineer in general accordance with the Unified Soil Classification System (ASTM D2488-75).

2.3 Laboratory Procedures

PSI conducted laboratory testing on select soil samples to aid in identifying and describing the physical characteristics of the soils and to aid in defining the site soil stratigraphy. The results of the field exploration and laboratory tests were used in PSI's engineering analysis and in the formulation of our engineering recommendations. All laboratory testing was performed in general accordance with ASTM procedures or appropriate standards. Laboratory testing included moisture content, organic content testing, hand penetrometer testing, estimated unconfined compressive strength testing by Rimac, grain size analysis, and Atterberg Limits testing. The soil corrosivity testing was subcontracted to SoilCor Corrosion and Thermal Sciences, and Testing Engineers International (TEI). Laboratory corrosion testing was performed on bulk samples obtained from about half of the

borings near the estimated invert elevations. The results of this testing are shown on the table of Corrosivity to Steel Pipe/DIP included in **Appendix C**. Common Fill laboratory testing including grainsize analysis, Atterberg Limits Determination, organic content testing, and modified Proctor Testing is summarized in **Appendix D**.

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SECTION 3 Exploration Results

3.1 General Subsurface Conditions

The soils encountered in the borings performed within the area of Contract Package 5, Return Flow Pipeline Stations 2000+00 to 3000+00 generally consisted of natural granular soils comprised of silty sand, sandy silt, or sand, with varying gravel content, and shallow overlying natural clay layers in some areas. Some of these natural granular soils were in a very dense condition and included possible cobbles and boulders. Strength tests on the natural granular soils indicated N-values ranging from about 7 blows per foot (bpf) to 50 blows for 2-inches of split spoon sampler penetration, but generally greater than about 20 bpf; and strength tests on the natural cohesive soils indicated estimated unconfined compressive strengths ranging from about 0.25 to 8.04 tons per square foot (tsf), but generally greater than about 1.0 tsf. Shallow depths of fill or possible fill were present at borings CC-B-70, 72, 90, 91, 96, 103, 104, and 106 through 110, overlying the above described natural soils. The borings were generally able to be extended to planned depths of 20-feet in open cut trench and jack/bore areas and 40-feet in HDD areas.

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in **Appendix A** should be reviewed for specific information at individual boring locations. These records include soil descriptions, stratification, penetration resistances, locations of the samples, and laboratory test data. The soil descriptions shown on the boring logs represents the conditions at the actual boring locations only. Variations are expected to occur between and beyond the boring locations and sampling intervals. The stratification represents the approximate boundaries between subsurface materials and the actual transitions may be gradual. Water level information obtained during field operations is also shown on the boring logs. The water levels observed during drilling and upon completion were highly varied. Some observations likely represented perched conditions, while other observations likely represented the apparent groundwater. The samples that were not discarded during classification or altered by laboratory testing will be retained for 60-days from the date of this report and then will be discarded unless other instructions are received.

Pavement section thicknesses were generally determined as requested within the sidewalls of the boreholes. Pavement material thicknesses measured are considered accurate to the nearest 0.25-inch, while the aggregate base thicknesses measured are considered accurate to the nearest inch. A summary of the approximate pavement section thicknesses is shown in **Table 3-1**.

Table 3-1 Summary of Approximate Roadway Pavement Section Thicknesses

Boring Number	Asphalt Thickness (in)	Concrete Thickness (in)	Aggregate Base Thickness (in)
CC-B-70	4.5	-	5
CC-B-93	6	-	3
CC-B-98	2	-	22
CC-B-103	5	-	4
CC-B-108	5	-	4

Some of the thinner asphalt or base thicknesses (such as CC-B-98) may be a result of the boring being performed near the edge of the roadway for safety concerns and may not be representative of the average thickness of the pavement.

A summary of the borings performed is shown on the Summary of Contract Package 5, Return Flow Pipeline Stations 2000+00 to 3000+00 Summary of Borings and Anticipated Issues included in **Appendix B**. This table includes:

- Boring number;
- Proposed Construction method at each boring;
- Approximate ground surface elevation at each boring as provided by Ayres Associates (adjusted as appropriate where borings were offset) and rounded to the nearest foot for ease of interpretation;
- Approximate pavement thickness in pavement boring areas and areas where non-pavement borings were offset to pavements;
- Approximate depth of existing fill/elevation at bottom of fill;
- Estimated depth/elevation of water encountered during and upon completion of drilling;
- Estimated seasonal high groundwater elevation based upon observed redoximorphic features, soil coloration, and soil moisture content;
- Estimated depth of any organic fill or organic natural soils (such as buried topsoil or peat) and estimated elevation to underlying suitable bearing natural inorganic soils;
- Estimated depth/elevation of very dense soils and possible cobbles/boulders; and
- Issues which may be encountered at the borings during construction.

Laboratory corrosion testing was performed on bulk samples obtained from about half of the borings near the estimated invert elevations. The results of this testing are shown on the table of Corrosivity to Steel Pipe/DIP Testing included in **Appendix C**. Common Fill laboratory testing including grainsize analysis, Atterberg Limits Determination, organic content testing, and modified Proctor Testing is summarized in **Appendix D**.

More detailed information at each boring location is provided on the individual boring logs included in **Appendix A**. Construction challenges which are anticipated are also discussed in the following sections.

3.2 Shallow Groundwater

Shallow water above or near the estimated open cut trench invert elevations, was encountered in various locations along Racine Avenue. At these locations, the depth of water was estimated to range from about 1- to 13-feet below the existing grades, at least at the time of the exploration. Fluctuation in the reported depths should be anticipated based on seasonal precipitation variation, lateral drainage conditions, and soil permeability characteristics. Longer term monitoring would be required to better evaluate groundwater levels. The following table, **Table 3-2**, indicates areas where water is estimated to be present above or near the approximate open cut trench invert elevations, the approximate depths/elevations water was encountered during drilling in these areas, and whether the water was estimated to be a perched condition or appeared to be related to the apparent groundwater.

Table 3-2 Summary of Areas of Shallow Groundwater Encountered During the Exploration

Boring Number	Approximate Invert Elevation (EL. feet)	Approximate Depth (EL.) of Water During Drilling Below Existing Grade (ft)	Perched/Apparent Groundwater
CC-B-91	EL. 859	5.5 (EL. 864.5)	Apparent
CC-B-93	EL. 912	5.5 (EL. 916.5)	Apparent
CC-B-95	EL. 974	13 (EL. 974)	Apparent
CC-B-101	EL. 901	5.5 (EL. 905.5)	Apparent
CC-B-104	EL. 906	10.5 (EL. 904.5)	Apparent
CC-B-105	EL. 907	8 (EL. 909)	Apparent
CC-B-109	EL. 971	5.5 (EL. 972.5)	Apparent
CC-B-110	EL. 966	8 (EL. 969)	Perched

At boring CC-B-110, the water level observed appear to be representative of perched groundwater condition. The water encountered at the remaining shallow water locations appear to be due to the apparent groundwater. Perched conditions can consist of relatively low volumes of water, or they can consist of high volumes of water which act similar to the groundwater table. The estimated seasonal high groundwater elevation at each boring location is shown on the Summary Table of Contract Package 5 Borings and Anticipated Issues, included in **Appendix B**, and generally ranged in depth from about 0-to 20-feet below ground surface.

3.3 Very Dense Soils

Very dense soils are defined as soils where SPT N-values are greater than about 50 blows per foot (bpf). Very dense soils, generally comprised of silty sand, sandy silt, or sand with gravel, and possible cobbles and boulders, were present above or near the estimated invert elevations in the general areas of the boundary of the property at 16310 Small Road (CC-B-72); Racine Avenue from about Interstate 43 to National Avenue (CC-B-90 to 92, 94, and 95); Racine Avenue south of Lawnsdale Road (CC-B-100); and Racine Avenue north of Racine Court (CC-B-107 and 108).

3.4 Organic Soils

Within the open cut trench boring of CC-B-70 located to the west of Westridge Drive, organic fill was present to a depth of about 5.5-feet below the existing grade. The organic fill materials are estimated to be above the invert elevation in this location.

3.5 Corrosion Potential

As requested, corrosion testing was performed on samples from about half of the borings near the preliminary pipeline invert elevations. In order to obtain a sufficient quantity of sample for testing, several samples from these borings were combined to create a composite sample for testing. Several subcontract laboratories were engaged for

this testing to expedite receipt of the results. Testing to determine the corrosivity of the in-place soils near the approximate invert elevations to steel pipe and DIP included the following tests, as requested:

- pH (ASTM G51-95 2012)
- Resistivity (saturated) (ASTM G57-06 2012 and ASTM G187-12)
- Chloride ion content (ASTM D512-12)
- Sulfide content (SM 4500-S2-D and ASTM D4658-15)
- Oxidation-Reduction Potential (SM 2580 B Mod. and ASTM G200-14)
- Moisture content (ASTM D2216)

The results of this testing are indicated on the Corrosivity to Steel Pipe/DIP Testing table included in **Appendix C**. Where DIP is being considered, the 10-Point System indicated in Appendix A of the ANSI/AWWA C105 is also shown on the table, with an explanation of the soil parameter point values shown after the table. Where the point total for a particular soil is 10 points or greater, corrosion protection is considered necessary for DIP according to AWWA.

SECTION 4 Evaluation and Recommendations

4.1 General

The Standard Specifications for Sewer & Water Construction in Wisconsin should be followed for all construction procedures and specifications. The subsurface conditions encountered are generally considered to be suitable for installation of the pipelines by open cut and trenchless methods. However, areas of Contract Package 5, Return Flow Pipeline Stations 2000+00 to 3000+00 will encounter shallow water, very dense soils, potentially unstable pipe subgrade, and potentially corrosive soils. The following addresses these concerns.

4.2 Open Cut Trench Areas

Most of this portion of Contract Package 5 will be installed by open cut trench methods. Issues which may arise with this method include very dense soils, temporary groundwater control, unsuitable subgrade, and excavation stability/proper backfilling. These are described below.

4.2.1 Very Dense Soils

Very dense soils, defined as soils with SPT N-values of 50 bpf or greater, were present in many borings at various depths along the alignment of this portion of Contract Package 5 as shown in the Summary Table of Contract Package 5 Stations 2000+00 to 3000+00 Borings in **Appendix B**. Most of the borings with very dense soils, and the thickest layers of very dense soils, were located along Racine Avenue in the City of New Berlin, where the soils consisted of natural silty sand, sandy silt, or sand with varying gravel content and possible cobbles and boulders. In open cut trenches, these very dense soils with possible cobbles and boulders may result in difficult excavation, longer excavation times, and the possible need for alternative methods of excavation. Where very dense soils may be present at or above the proposed invert elevations, as indicated in the boring logs, it may be beneficial to perform test pit excavations to better evaluate the composition of the subsoils, identify areas of cobbles/boulders, and determine if alternative methods such as ripping by the excavator with specialized single point or bucket ripper attachments will be necessary. Test pits will also help better estimate the effort and time which will be necessary for excavation. Where test pits are performed and observed by the Program geotechnical engineer, additional recommendations may be necessary based on the observations made. Longer time for excavating should be expected in at least these areas of very dense soils.

4.2.2 Temporary Groundwater Control

Where present, shallow groundwater is considered to be an issue for open cut trench installation. Areas of shallow groundwater, where water was encountered within the borings above or near the estimated pipeline invert elevation, were encountered within 20 of the borings performed throughout the area of Contract Package 5, as shown in the Summary Table of Contract Package 5 Stations 2000+00 to 3000+00 Borings in **Appendix B**. In general, the degree of water control issues will depend upon the soil type; the depth of the excavation below the water; the presence of perched versus apparent groundwater; the volume of water entering the trench; the length of time the excavation remains open; and the effectiveness of the dewatering system.

Conventional temporary dewatering with sumps and pumps is estimated to be necessary during construction in at least the following open cut trench installation areas:

- Racine Avenue near National Avenue (CC-B-95), south of Observatory Road (CC-B-104), near Racine Court (CC-B-106), and southeast of Swartz Road (CC-B-110).

In these areas, water was encountered during drilling near or slightly below estimated invert elevations, or water estimated to be perched was encountered above the estimated invert elevations. Where the excavations in these areas extend several feet or more below the groundwater or into large volumes of perched groundwater, more comprehensive methods of dewatering such as those described below may be necessary.

Comprehensive temporary dewatering during construction, such as with a series of sumps or well points and high capacity pumps, is estimated to be necessary in the following open cut trench installation areas:

- Racine Avenue north of Interstate 43 (CC-B-91 and 93), near Lawnsdale Road (CC-B-101), near Observatory Road (CC-B-105), and southeast of Swartz Road (CC-B-109).

At these borings, water estimated to represent the apparent groundwater at the time of drilling was encountered about 1.5- to 5.5-feet above estimate invert elevations.

In general, if excavations extend only a few inches or so below the groundwater or into small volumes of perched groundwater, it is expected that filtered sump pumps or other conventional means should suffice to control the groundwater. However, for excavations which extend to significant depths below the groundwater, or into large volumes of perched groundwater, prolonged dewatering with a series of sumps or well points and high capacity sump pumps, or other more comprehensive means may be necessary to facilitate construction. A qualified dewatering contractor should be engaged to review the soils and groundwater conditions to determine the appropriate means and methods for effective dewatering. Dewatering is recommended to be performed to a depth of at least two-feet below the lowest excavation depth to aid with subgrade stability. Care must be taken during any dewatering to prevent possible settlement of adjacent structures due to rapid and/or severe drawdown effects. The contractor should evaluate this potential based upon the type of dewatering method proposed and the existing soil conditions. It may be beneficial to engage a contractor specializing in dewatering for this Program.

It should be noted that the estimated seasonal high groundwater elevations shown in the Summary Table of Contract Package 5 Stations 2000+00 to 3000+00 Borings in **Appendix B**, based upon the observed soil redoximorphic features, coloration, and moisture content, were generally higher than the free water levels observed during the exploration. As such, there is the potential for the water levels during construction to be higher than those observed during the exploration based upon seasonal variations and recent precipitation events. However, where the subsoils consist of cohesive soils, the movement of free water into the excavation is generally expected to be relatively slow, except possibly where granular seams are present.

Fluctuations in the groundwater level should be anticipated throughout the year depending on variations in climatological conditions and other factors not apparent at the time the borings were performed. The possibility of groundwater level fluctuation and perched groundwater conditions should be considered when developing the design and construction plans for the Program. Where it is desired to better estimate the water levels along the route, monitoring wells could be installed, and the groundwater levels observed over an extended period. Or, test pits could be observed in areas where shallow water is anticipated, to better estimate water levels in an open excavation and relative rates at which the excavation water levels rise, in order to better estimate the necessary dewatering efforts. Where test pits are performed and observed by the Program geotechnical engineer, additional recommendations

may be necessary based on the observations made. It is recommended that the contractor verify the groundwater levels and dewatering requirements prior to bidding and construction.

4.2.3 Pipe Subgrade

Based on the soil borings performed, the soils observed at the estimated invert elevations are generally considered to be suitable for support of the pipeline in open cut trench installation areas. However, existing fill soils were present at boring CC-B-96 near the estimated pipeline invert elevations. Existing fill can contain areas of unstable loose, soft, and/or very moist to wet materials, especially where these materials were placed in an uncontrolled manner. Additionally, potentially wet very loose or very soft natural silt, sandy silt, or lean clay soils may be encountered below the pipe invert elevation within the areas of CC-B-101, 109, and 110, and possibly other areas along the Contract Package 5 Stations 2000+00 to 3000+00 alignment. Where wet, very loose, very soft, organic, or otherwise unsuitable soil conditions are encountered within the trench excavations, the subgrade should be over-excavated to expose suitable bearing soils. Limited undercutting of about one- to two-feet along with the placement of a layer of additional granular bedding material, or possibly coarse crushed stone if necessary (and possibly a geotextile where necessary), is generally anticipated to be sufficient to develop a stable working surface. However, a representative of the Program geotechnical engineer should be present during construction to help identify areas requiring over-excavation and the over-excavation depths necessary to reach suitable and stable subgrade soils. Where over-excavation is performed, the trench should be widened laterally beyond the pipe in each direction, a minimum distance equal to the depth of over-excavation below planned grade. The over-excavated areas can be replaced with additional pipe bedding material or Select Fill which is properly placed and compacted according to the Program specifications, as indicated below. To limit required lateral over-excavation when using soil backfill, the undercut could be backfilled with lean concrete. With this option, the trench should be 4-inches wider than the width of the pipe on each side.

4.2.4 Pipe Bedding and Backfilling

Proper selection and compaction of the pipe bedding and cover materials is essential to reduce the amount of pipe deflection and settlement of the trench backfill in open cut installation areas. This should be done in general accordance with Wisconsin state codes and requirements. Based on the Program Specifications, bedding material must exhibit a well-defined moisture density relationship whereby 90% or more is retained on the No. 8 sieve, 100% of the material passes the one-inch sieve, and the material is well graded between these limits. Bedding of the pipe should be performed in accordance with normally accepted procedures for the class of pipe being used. The bedding material must be compacted to 95% of the maximum dry density as determined by the modified Proctor method.

Backfilling of the excavation should be done in such a way as to provide relatively uniform lateral support to the pipe until the backfill extends over the pipe. This can be accomplished by performing even fill placement at approximately one-foot intervals simultaneously on both sides of the pipe until reaching the top of the pipe. The backfill materials up to two-feet above the pipe must be compacted to a minimum of 90% of the maximum dry density as determined by the modified Proctor method. Care must be taken not to damage the pipe during placement and compaction of the Select Fill backfill materials directly over the pipe.

Backfill for trenches is as important as the original subgrade preparation or engineered fill placed to support either a foundation or slab. Therefore, it is imperative that the trench backfill be placed to meet the Program specifications. Two types of materials have been specified for use as backfill as indicated in the Program Specifications. This includes Select Fill and Common Fill. Select Fill is defined as gravel, crushed stone, or other similar material which

meets the gradation specified and can be easily compacted to minimum of 95% of the maximum dry density as determined by the modified Proctor method. Select Fill is generally considered to be an imported, processed material. Very fine sand or uniformly graded granular materials are not acceptable as use for Select Fill. Common Fill materials are generally considered to be excavation spoils which meet the specified gradation ranges indicated for granular materials, and Liquid Limit and Plasticity Indices of less than or equal to 40 and 20, respectively, for cohesive materials. Laboratory testing that has been performed for the evaluation of the soils from above the approximate invert elevations for use as Common Fill is summarized in the Common Fill Laboratory Testing table in **Appendix D**. Several of the samples tested met the Common Fill specifications. It is recommended that a representative of the Program geotechnical engineer be present during construction to help estimate the suitability of excavation spoils for use as Common Fill. Additional laboratory testing including modified Proctor testing, grain size determination by mechanical and hydrometer methods, and Atterberg Limits determination will likely be necessary prior to and during construction to verify whether the material properties meet the specifications.

Select Fill must be used within all areas up to at least one-foot above the top of the pipe. Then, within the roadway, sidewalk, or other structural areas, Select Fill (or slurry) must be placed and compacted in uniform lifts which are sufficient to achieve a minimum density of 95% of the maximum density as determined by the modified Proctor method. In non-structural areas, such as landscape areas, Common Fill materials can be compacted to a minimum of 90% of the maximum dry density as determined by the modified Proctor method.

Specifications for compaction testing should assign an appropriate frequency of testing to account for the length of trench and the depth of the trench backfill, as well as consider the sensitivity of surface features to settlement. Backfill of trenches should not be performed with water standing in the trench.

It is recommended that mechanical compaction be used to achieve uniform consolidation of the backfill material. Proper moisture control is essential to reduce the amount of compactive effort necessary to achieve the specified density. This is especially true of clayey soils, where drying may be required to achieve near optimum moisture levels prior to compaction. A sheepsfoot roller is generally required for compaction of clayey soils, whereas a vibratory smooth drum roller or backhoe mounted vibratory plate compactor is preferred for granular material. Where cohesive Common Fill soils are being used as backfill, it will likely be necessary to widen the trench in order to allow for the access of a sheepsfoot roller, in order to achieve the compaction specified. Compaction of cohesive soils within a narrow trench with a vibratory plate can be difficult and is typically not adequate to achieve 90% compaction relative to the modified Proctor dry density.

Where slurry backfill is to be used, the Standard Specifications for Sewer & Water Construction in Wisconsin should be followed. The slurry should be thoroughly mixed and delivered with concrete trucks. It should be noted that where the slurry does not contain cement, at least some drainage of the slurry is typically necessary for the material to properly consolidate and provide adequate support of the overlying structural areas. Therefore, slurry must not be placed within a trench containing water, and the maximum amount of water recommended in the mix must not be exceeded. Where cement is added to the slurry, a maximum design compressive strength of about 200 psi should not be exceeded in order to allow for excavation of the slurry backfill by backhoe methods where necessary in the future to expose the pipelines.

The selection of backfill materials for various applications should be done in consultation with the Program geotechnical engineer. Similarly, the evaluation of the subgrade and placement and compaction of fill for structural applications should be monitored and tested by a qualified representative of the Program geotechnical engineer.

Additional guidance can be provided at the time of construction in the selection process for grade-raising fill and trench backfill.

Organic fill soils were present within boring CC-B-70 on Small Road to the west of Westridge Drive. These organic soils were present above the invert elevation. Organic soils are not recommended for re-use as backfill materials due to their potential for settlement over time due to decomposition and their difficulty in being properly compacted. Where the existing soils are being considered for use as Common Fill in landscape areas, these organic materials must be replaced with materials meeting the specifications for Common Fill. This may result in significant importing of suitable materials in this area.

4.2.5 Geotextile Placement

Geotextile placement is recommended in two instances. First, it is recommended that the bedding materials be completely wrapped by a geotextile to provide filtration where the bedding materials are below the groundwater and where the following relationships are not met:

- $D_B^{15}/D_A^{85} \leq 5$;
- $D_B^{50}/D_A^{50} \leq 25$; and
- $D_B^{15}/D_A^{15} \leq 20$.

In these relationships, "B" represents the bedding material, "A" represents the adjacent in-situ soils, and D^x is the diameter for which x percent is finer by weight. Where these relationships are met, migration of fines is not considered to be an issue. In general, where the bedding material consists of ¾-inch limestone chips meeting the gradation requirements of the Standard Specifications for Sewer and Water Construction in Wisconsin Table 33, in-situ soils not estimated to meet the above relationships include fine to medium sand, silty sand, and silt. These relationships are based on the Army Corps of Engineers as provided in their Filter Experiments and Design Criteria Technical Memorandum No. 3-360. As such, without the use of a geotextile in these instances, migration of fines from the adjacent in-situ soils into the bedding materials may occur, resulting in the creation of voids in the adjacent in-situ soils, and the potential for some consolidation/settlement of the soils adjacent to the trench.

The second instance where geotextile placement is recommended would be where layers of soft, loose, and/or organic soils are observed within the trench walls above the bedding material which will not provide adequate confinement of the backfill materials to allow for proper backfill compaction and prevention of lateral bulging of the backfill, resulting in potential settlement.

The estimated locations where geotextile placement is necessary are presented in **Appendix E**. The areas are estimated based upon the soil conditions at the individual boring locations and the assumption that the conditions present at one boring will extend to about halfway between this boring and the adjacent borings on either side. Actual site conditions may vary significantly.

4.2.6 Excavation Stability

Sloping, shoring, or bracing of the excavation sidewalls will be necessary as appropriate in open cut areas of the pipeline installation. Trenching in granular, organic, and fill soils may be difficult due to the instability of vertical slopes, and will therefore require a flattening of trench sides, or some other means of protection, to facilitate construction and to protect life and property. Significant instability, sloughing, and caving can be expected within unprotected excavations, in at least areas of granular, organic, and fill soils, especially encroaching upon and extending below the groundwater, or where perched conditions are present. Sloped excavations may not be feasible in some cases, depending on final invert elevations and the resulting required depths of the trench. Shoring, bracing, trench boxes, or other means of protection will likely be necessary, at least in some locations. Any shoring systems should be properly designed by an experienced Registered Professional Engineer. The extent of bracing or other protection of open cut excavations will depend upon depth of cut, groundwater conditions, soils encountered, length of time the excavation will be open, area available for excavation, and local governing regulations. Cohesive soils may appear to stand nearly vertical in shallow excavations for short periods of time. However, soil creep, surcharge loads (such as from soil stockpiling next to the trench or other sources), precipitation, subsurface groundwater seepage, construction activity or adjacent traffic vibrations and other factors may cause these soils to cave within an unpredictable period of time. Construction should be performed in accordance with The Standard Specifications for Sewer & Water Line Construction in Wisconsin.

Where excavations encroach upon or extend below the groundwater or perched zones and into fine sand, silt, or soft clay, they may become substantially unstable when the confining effect of the overburden is removed. Significant sloughing or caving of sidewalls may also occur. Some over-excavation of softened or loosened soils, in conjunction with the use of a crushed stone working mat, may be necessary to establish a stable bearing subgrade. Additionally, significantly widened excavations may result, or be required to maintain or achieve sidewall stability. Proper dewatering measures will also be necessary. A representative of the Program geotechnical engineer should be present during construction to help determine appropriate stabilization efforts where necessary.

It is mandated that excavations, whether they be for trenches, entry or receiving pits, or other necessary excavations, be constructed in accordance with current Occupational Safety and Health Administration (OSHA) guidelines to protect workers and others during construction. PSI recommends that these regulations be strictly enforced; otherwise, workers could be in danger and the owner(s) and the contractor(s) could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in OSHA 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case, should slope height, slope inclination, or excavation depth, including trench excavation depth, exceed those specified in local, state, and federal safety regulations.

PSI does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.

4.3 Trenchless Construction

Trenchless installation methods are proposed for several locations in the area of Contract Package 5 Stations 2000+00 to 3000+00 as indicated in **Table 4-1**. Jack and bore (casing) methods are proposed for several roadway crossings, and HDD is proposed for waterway crossings. The jack and bore borings of CC-B-74 and 89A, and the HDD borings of CC-B-80, 81, 86, and 87 had not yet been performed at the time of this report preparation but will be included in a revision to this report upon completion. Based upon the subsurface conditions observed at the borings, the planned trenchless methods are generally considered to be feasible within the proposed locations. The soils encountered within boring CC-B-73 consisted of natural soft to very stiff silty clay or lean clay; and the soils encountered within CC-B-90 consisted of natural dense sandy silt and gravel or hard sandy lean clay fill soils. These soils are not anticipated to pose major resistance during trenchless installation. However, the hard lean clay fill soils may cause the trenchless methods to be somewhat slower than where moderate to lower strength soils are present. The additional borings of CC-B-74, 80, 81, 86, 87, and 89A must be performed to provide complete recommendations for all the trenchless locations. The trenchless excavating contractor should be provided with a copy of this report and the boring logs. In the area of trenchless excavations, where very dense or hard soils may be present above the proposed invert elevations, as indicated in the boring logs, it may be beneficial to perform test pit excavations to better evaluate the composition of the subsoils, identify areas of cobbles/boulders, and determine if the proposed trenchless methods are feasible for each location. The presence of cobbles and boulders may result in refusal conditions where the alignments may need to be altered.

Table 4-1 Summary of Trenchless Crossings Conditions

Obstacle	Roadway	Boring(s)	Trenchless Method Proposed	Approx. Invert Elevation (EL. ft)	Shallow Water?	General Description of Anticipated Soil Type
Interstate 43	Property North of Small Road	CC-B-73, 74*	Jack/Bore	884-893	No	Soft to Very Stiff Silty Clay or Lean Clay
Small Unnamed Creek	I-43	CC-B-80*, 81*	HDD			
Small Unnamed Creek	I-43	CC-B-86*, 87*	HDD			
Racine Avenue	Racine Avenue	CC-B-89A*, 90	Jack/Bore	850	No	Dense Sandy Silt and Gravel or Hard Sandy Lean Clay Fill

*Boring not yet performed

PSI recommends that in trenchless installation areas, the pipeline be installed without interruptions to the installation process as much as possible. During jack and boring or HDD, the pore water pressures within the surrounding soil are increased and when the boring operation is halted, the pore water pressures relax. This process may cause the casing and/or drilling tooling to “freeze” in-place making it very difficult to further advance the casing or HDD following an interruption in the installation process.

4.3.1 HDD Considerations

The borings in the areas of planned HDD installation for this portion of Contract Package 5 (CC-B-80, 81, 86, and 87) have not yet been performed. Once these have been completed, a revision to this report will be provided which includes the results of these borings along with appropriate recommendations. In general, clay soils are considered to be the most ideal for HDD, but HDD can also be performed within some granular soils. However, the greater the percentage of gravel within the soil matrix, the more difficult HDD methods can be. Drilling can be very difficult where gravel content is from about 50 to 85%, and nearly impossible where gravel content is greater than about 85%. Soils with gravel contents of greater than about 50% are difficult to suspend in fluid for removal and do not typically provide a stable borehole. HDD can also be performed within certain types of bedrock with the appropriate equipment.

The drilling fluid used for HDD must be of suitable consistency to suspend the soil cuttings for removal, coat the borehole wall, and lubricate the pipe/soil interface to reduce the skin friction. It will be important to maintain adequate drilling fluid pressure during the entire process. To preclude caving of the tunnel roof, prudent care must be taken to provide for the presence of sufficient soil materials above the crown of the excavation. Installation must also be at an appropriate depth to prevent drilling fluid loss to the surface of the site. This is especially important when installing below soft, loose, or organic soils. Therefore, it is generally recommended that HDD installation be directed below these types of soils.

Overcut of the drilled hole is necessary during installation to allow for drilling fluid injection and circulation, and to reduce stresses during carrier pipe pullback. Subsurface voids can occur during the drilling process from ground loss resulting from soil collapse into the over-excavation of the drill hole or from drilling fluid loss to the ground surface. Soil collapse into the annular space between the pipe and the surrounding soil can be minimized by choosing an appropriate installation depth, a reasonable overcut radius, and by maintaining drilling fluid at an appropriate pressure within the annulus throughout installation.

Surface features must be monitored by the contractor for settlement caused by ground loss and collapse of the soil above and around the pipe due to alterations of the stresses in the soil. If surface settlement occurs which exceeds tolerable or otherwise specified limits for the obstacle being crossed beneath, corrective measures should be undertaken from the ground surface by the contractor. If the settlement damages any existing surface structures or underground utilities, the use of compaction grouting techniques should be performed as soon as possible to stabilize and restore the damaged structures. Ground movement associated with drilled construction is influenced by the methods of construction and the quality of workmanship as well as the subsurface conditions. Where there is a risk of settlement due to voids created during installation, it is recommended that the overcut annulus be permanently grouted following installation to help minimize the potential for settlement.

4.3.2 Jack and Bore Considerations

Two of the borings in the proposed jack and bore areas (CC-B-74 and 89A) had not been performed at the time of this report submission. Upon completion of these borings, a revision to this report will be provided including the results of this additional exploration. The following recommendations are provided on a preliminary basis based on the borings performed at this time.

Where jack and bores are performed, the approach trench and receiving area should be large enough to accommodate the boring machine, tracks, and at least one section of casing. The pits must also be suitably braced. Sheeting and bracing plans should be submitted to the design engineer prior to the excavation of the pits.

Cuttings created during jack and bore are removed by mechanical means of rotating the augers inside the casing. A fluid consisting of water with bentonite or polymer/soap is added where granular and clay soils are encountered, respectively, to help reduce the skin friction between the casing and soil wall (decrease necessary thrust to jack the casing) and help remove the soil cuttings. Where larger cobbles or boulders are encountered, jack and bore methods may be difficult or may not be feasible. The borings at the proposed jack and bore locations indicated medium stiff to hard lean clay near the invert elevations, which are not considered to result in major issues for jack and bore installation. However, boring CC-B-90 indicated natural dense sandy silt and gravel and hard sandy lean clay fill. It may be beneficial to perform a test pit near this area to better evaluate the nature of the very dense soils and determine the effort necessary to excavate at this location.

Where present, shallow groundwater is considered to be an issue for jack and bore locations due to the dry conditions necessary within the entry and receiving pits and associated dewatering efforts. Where HDD is used, shallow groundwater is less of a concern due to drilling fluid which is introduced during this process to remove cuttings and stabilize the hole created.

To preclude caving of the boring roof, prudent care must be taken to provide for the presence of sufficient soil materials above the crown of the excavation and below the obstacle being crossed. Granular soils and soft cohesive soils may be encountered at the boring roof during jack and boring operations in some areas. Special care should be taken to ensure the stability of the unprotected face at the cutting edge. Where unstable soils are present at the boring roof, such as the very soft silty clay soils near CC-B-73, cave-in may occur. Consideration can be made in the area of CC-B-73 to lower the invert elevation a few feet such that the tunnel roof is below the very soft silty clay and within the underlying very stiff lean clay soils. Surface features must be monitored by the contractor for settlement caused by ground loss and collapse of the soil above and around the pipe due to alterations of the stresses in the soil. If surface settlement occurs which exceeds tolerable or otherwise specified limits for the obstacle being crossed beneath, corrective measures should be undertaken from the ground surface by the contractor. If the settlement damages any existing surface structures or underground utilities, the use of compaction grouting techniques should be performed as soon as possible to stabilize and restore the damaged structures. Ground movement associated with jack and bore installation is influenced by the methods of construction and the quality of workmanship as well as the subsurface conditions. Where there is a risk of settlement due to voids created during installation, it is recommended that the annular space between the casing and adjacent soils be permanently grouted following installation to help minimize the potential for settlement.

4.4 Corrosion Considerations

Laboratory corrosivity testing relative to steel pipe/DIP is summarized in **Appendix C**. The following is a brief discussion of these testing results. However, it must be noted that PSI does not provide corrosion protection design. A qualified corrosion engineer must be engaged to provide recommendations based on the pipe materials used and the results of the laboratory testing. To evaluate the subsoils near the pipe invert elevation for corrosivity potential to steel pipe/DIP, the following characteristics were determined by laboratory testing:

- pH (ASTM G51-95 2012)
- Resistivity (saturated) (ASTM G57-06 2012 and ASTM G187-12)
- Sulfide content (SM 4500-S2-D and ASTM D458-15)
- Chloride ion content (ASTM D512)

- Oxidation-Reduction Potential (SM 2580 B Mod. and ASTM G200-14)
- Moisture content (ASTM D2216)

The 10-Point scale shown in **Appendix C** is recommended by the American Water Works Association (AWWA) and the Ductile Iron Pipe Research Association (DIPRA) for use to determine where corrosion protection is necessary for DIP. Based on this scale, soils with a point total of 10 or greater are considered potentially corrosive to DIP, requiring protective measures. As shown, most of the soils tested had parameter values summing to 10 points or greater. Exceptions included several areas such as Racine Avenue from about Interstate 43 to National Avenue (CC-B-91 and 94); and several other isolated areas along the Contract Package 5 alignment, where the point totals were less than 10.

Other factors to consider when determining the potential corrosivity of an environment to the pipeline include potential stray currents from nearby cathodic protection, railroads, and industrial equipment. The designer should also consider the potential corrosivity of the bedding and backfill materials in direct contact with the pipe. Chloride content was also determined as requested and should be considered by the designer when determining total soil corrosivity to steel pipe and DIP.

Where corrosion protection is determined to be necessary, the following measures can be considered when appropriately evaluated by a qualified corrosion engineer:

- Bonded tape-wrap
- Polyethylene encasement
- Polyethylene encasement with V-BIO
- Zinc coating
- Bonded joints with corrosion monitoring stations
- Cathodic protection

Other applications or methods not listed herein may also be available. Appropriate corrosion protection, where determined to be necessary, is essential to the pipeline achieving its design life, and is a very important consideration in the overall pipeline design.

4.5 Geotechnical Risk

The concept of risk is an important aspect of the geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. The analytical tools that geotechnical engineers use, are generally empirical and must be used in conjunction with engineering judgment and experience. Therefore, the solutions and recommendations presented in the geotechnical evaluation should not be considered risk-free, and more importantly, are not a guarantee that the interaction between the soils and the pipelines will perform as planned. The engineering recommendations, presented in the preceding sections, constitute PSI's professional estimate of the necessary measures for the pipelines to perform according to the proposed design based on the information generated and referenced during this evaluation, and PSI's experience in working with these conditions.

4.6 Report Limitations

The recommendations submitted are based on the available subsurface information obtained by PSI and design details furnished by the Program team. If there are revisions to the plans, or if deviations from the subsurface conditions noted in this report are encountered during construction, PSI should be notified immediately to determine if changes in the recommendations are required. If PSI is not retained to perform these functions, PSI will not be responsible for the impact of those conditions on the Program.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are more complete, the Program geotechnical engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At that time, it may be necessary to submit supplementary recommendations.




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Appendix A - Log of Borings













(NO TEXT FOR THIS PAGE)

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-071	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 11/16/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		PAGE No 1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 11/16/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG CME ATV #383		BORING OFFSET		NORTHING 348305.52		EASTING 2503663.25			
CREW CHIEF S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Small Road		STATION		OFFSET			
FIELD LOG BY D. Pavlons		HAMMER TYPE Auto		EFFICIENCY 90%		SURFACE ELEVATION 894 ft					
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
COUNTY											

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil (7"± Thick)	OL								
1	SS	18	2 4 5	9		0.6 (893.4) Brown and Gray Mottled Sandy Lean Clay, Trace to With Gravel, Moist to Very Moist, Very Stiff	CL			4.0				45	Modified Proctor: Maximum Dd = 128.0 pcf Optimum MC = 11.5%
2	SS	18	2 3 7	10	890									19	
					5									14	
3	SS	18	3 6 11	17		5.5 (888.5) Brown Lean Clay, Trace Sand and Gravel, With Silt Lenses, Moist, Hard to Very Hard	CL			4.0+	6.18			15	
4	SS	18	6 9 13	22	885					4.0+	8.04			15	
5	SS	18	7 12 13	25		10.5 (883.5) Gray Lean Clay, Trace Sand and Gravel, Damp to Moist, Very Stiff to Hard				4.0+				13	
6	SS	18	7 11 13	24	880		CL							14	
					15										
7	SS	18	3 4 7	11	875					2.25	3.38			15	
					20										
End of Boring at 20.0 ft.															






WATER & CAVE-IN OBSERVATION DATA					
	WATER ENCOUNTERED DURING DRILLING: NE			CAVE DEPTH AT COMPLETION: 13ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE			CAVE DEPTH AFTER 0 HOURS: N/A	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded		
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.					

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-072	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 11/16/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 11/16/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG Truck #431		ROADWAY NAME Small Road		NORTHING 349227.55		EASTING 2503652.82			
CREW CHIEF S. Briscoe		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		OFFSET		SURFACE ELEVATION 931 ft	
FIELD LOG BY D. Pavlons		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
LOG QC BY B. Broback											




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q _u (tsf)	Unconfined Comp. Strength Q _u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
					930	Topsoil (3"± Thick)	OL							19	P ₁₀ = 37.5% P ₆₀ = 20.0% P ₂₀₀ = 15.3%
1 SS	0	4 16 27	43			Possible Fill, Brown Silty Sand and Gravel, With Clay Pockets, Moist	SM							5	
2 SS	12	7 22 50/5"	R			Brown Silty Sand and Gravel, Possible Cobbles and Boulders, Damp to Moist, Very Dense								5	
				5											
					925										
3 SS	18	20 22 29	51				SM							7	
4 SS	0	50/5"	R											1	
				10											
					920	Brown Medium Sand and Gravel, Possible Cobbles and Boulders, Damp, Very Dense								3	
5 SS	9	26 50/5"	R												
6 SS	6	14 50/5"	R				SP							3	
				15											
					915										
7 SS	0	50/2"	R												
				20											
			</												

End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: NE		CAVE DEPTH AT COMPLETION: 14ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>
				DRY <input type="checkbox"/>

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-073	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 11/16/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		PAGE No 1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 11/16/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG CME ATV #383		BORING OFFSET		NORTHING 349881.62		EASTING 2503209.01			
CREW CHIEF S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Interstate 43		STATION		OFFSET			
FIELD LOG BY D. Pavlons		HAMMER TYPE Auto		EFFICIENCY 90%		SURFACE ELEVATION 894 ft					
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
COUNTY											




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil (8"± Thick)	OL								
1	SS	18	2 2 3	5		0.7 (893.3) Brown and Gray Mottled Lean Clay, Very Moist, Stiff	CL			1.75		48	25	26	
2	SS	18	2 2 3	5	890	5.5 (888.5) Gray and Light Brown Mottled Silty Clay, Very Moist, Very Soft	CL-ML			2.0		48	25	34	
3	SS	18	1 1 1	2		8 (886) Brown Lean Clay, With Silt and Sand Seams, Moist, Very Stiff	CL			2.75					
4	SS	18	3 6 8	14	885	10.5 (883.5) Brown Silty Clay, With Fine Sandy Silt Seams and Sand Seams, Moist to Very Moist, Very Stiff	CL-ML								
5	SS	18	3 13 11	24		12 (882) Brown and Orange Sandy Silt, With Gravel, Moist, Medium Dense	ML								
6	SS	18	4 4 12	16	880	15 (879) Gray Sandy Silt and Gravel, Wet, Very Dense	ML								
7	SS	16	12 24 50/5"	R	875										
				20		20 (874)									






End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA






WATER ENCOUNTERED DURING DRILLING:	15ft.	CAVE DEPTH AT COMPLETION:	11ft.	WET <input type="checkbox"/>
WATER LEVEL AT COMPLETION:	NE	CAVE DEPTH AFTER 0 HOURS:	N/A	DRY <input type="checkbox"/>
WATER LEVEL AFTER 0 HOURS:	N/A	NE = Not Encountered; NMR = No Measurement Recorded		




NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-091	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/20/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 9/20/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG CME ATV #383		BORING OFFSET		NORTHING 346790.33		EASTING 2493049.26			
CREW CHIEF S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Racine Avenue		STATION		OFFSET			
FIELD LOG BY V. Jones		HAMMER TYPE Auto		EFFICIENCY 90%		SURFACE ELEVATION 870 ft					
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
COUNTY											






Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil Fill (4"± Thick)	OL								
1	7	3 4 6	10			Fill, Brown and Dark Gray Lean Clay, With Sand and Gravel, Very Moist	CL			1.25				21	
2	5	4 5 7	12	5	865										
						Brown and Gray Sand and Gravel, Trace to With Silt, Wet, Medium Dense	SP-SM							12	
3	10	6 8 11	19												
						Light Brown Silty Sand and Gravel, Wet to Very Moist, Loose to Medium Dense	SM							10	
4	8	3 4 4	8	10	860									14	
5	12	9 11 10	21												
						Gray Sandy Silt, With Gravel, With Clay, Possible Cobbles and Boulders, Damp to Very Moist, Very Dense	ML							8	
7	13	30 16 36	52	15	855										
8	4	50/4"	R	20	850									7	




End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA					
	WATER ENCOUNTERED DURING DRILLING: 5.5ft.			CAVE DEPTH AT COMPLETION: 12ft.	
	WATER LEVEL AT COMPLETION: NE			CAVE DEPTH AFTER 0 HOURS: N/A	
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded		
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.					

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-092	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/21/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 9/21/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG Truck #431		BORING OFFSET		NORTHING 347664.95		EASTING 2493002.26			
CREW CHIEF S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Racine Avenue		STATION		OFFSET			
FIELD LOG BY V. Jones		HAMMER TYPE Auto		EFFICIENCY 90%		SURFACE ELEVATION 903 ft					
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
COUNTY											

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil (3"± Thick)	OL							6	
1 SS	6	10 7 5	12		900	Light Brown Sandy Silt with Gravel, Trace Gray Mottling at 8'-10', With Sand and Silty Fine Sand Seams, Possible Cobbles and Boulders, Very Moist to Moist, Medium Dense to Very Dense								12	
2 SS	8	6 16 16	32	5			ML							10	
3 SS	7	13 26 30	56		895									10	
4 SS	12	10 18 26	44	10										13	
5 SS	7	20 46 50/4"	R		890	Gray Sandy Silt, With Clay and Fine Sand Seams, Possible Cobbles and Boulders, Moist, Dense to Very Dense								13	
6 SS	13	12 26 32	58	15			ML							13	
7 SS	10	16 20 22	42	20										12	
End of Boring at 20.0 ft.															






WATER & CAVE-IN OBSERVATION DATA					
	WATER ENCOUNTERED DURING DRILLING: NE			CAVE DEPTH AT COMPLETION: 13ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE			CAVE DEPTH AFTER 0 HOURS: N/A	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded		WET <input type="checkbox"/>
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.					

PROJECT NAME Great Water Alliance				BORING LOG			 		BORING No		CC-B-093	
PROJECT No 00521741									PAGE No		1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No			DATE STARTED 10/03/17			HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No			DATE COMPLETED 10/03/17			LATITUDE				
CREW CHIEF S. Briscoe		DRILLING RIG Truck #431			BORING OFFSET			LONGITUDE				
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3 1/4 HSA			ROADWAY NAME Racine Avenue			NORTHING 348463.35				
LOG QC BY B. Broback		HAMMER TYPE Auto	EFFICIENCY 90%	STATION		OFFSET	EASTING 2493041.69					
COUNTY		TOWNSHIP	RANGE	SECTION		1/4 SECTION	1/4 SECTION	SURFACE ELEVATION 922 ft				




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q _u (tsf)	Unconfined Comp. Strength Q _u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	6	29 50/5"	R		920	Asphalt (6"± Thick) 0.5 (921.5) Aggregate Base, Gray Crushed Stone, Damp (3"± Thick) 0.8 (921.2) Brown and Gray Mottled Silty Sand and Gravel, Moist, Very Dense 3 (919) Brown Silty Sand and Gravel, Possible Cobbles and Boulders, Moist to Wet, Dense	SM							1 16	
2 SS	10	20 19 17	36	5										4	
3 SS	13	6 14 22	36		915		SM							8	
4 SS	16	8 16 20	36	10										14	P ₁₀ = 75.4% P ₆₀ = 54.6% P ₂₀₀ = 37.5%
5 SS	12	16 20 22	42		910									10	
6 SS	10	39 50/5"	R	15		Gray Silty Fine Sand and Gravel, Possible Cobbles and Boulders, Moist, Very Dense 13 (909)								7	
4 SS	4	50/4"	R		905		SM								
				20										7	
8 SS	0	16 13 30	43		900	Brown Coarse Sand and Gravel, Possible Cobbles and Boulders, Wet, Dense 20.5 (901.5) 22.5 (899.5)	SP								

End of Boring at 22.5 ft.

WATER & CAVE-IN OBSERVATION DATA






	WATER ENCOUNTERED DURING DRILLING: 5.5ft.		CAVE DEPTH AT COMPLETION: 11ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	DRY <input type="checkbox"/>




NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-094	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/20/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 9/20/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG CME ATV #383		BORING OFFSET		NORTHING 349194.18		EASTING 2493064.5			
CREW CHIEF S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Racine Avenue		STATION		OFFSET			
FIELD LOG BY V. Jones		HAMMER TYPE Auto		EFFICIENCY 90%		SURFACE ELEVATION 972 ft					
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
COUNTY											

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil (3"± Thick)	OL								
1 SS	8	8 12 13	25		970	0.3 (971.7) Brown Silty Sand and Gravel, Possible Cobbles and Boulders, Moist, Medium Dense to Very Dense								6	
2 SS	11	12 30 36	66	5			SM							6	
3 SS	9	8 10 8	18		965									4	
4 SS	12	12 24 36	60	10										3	
5 SS	10	22 38 50/5"	R		960	10.5 (961.5) Light Brown Fine to Medium Sand and Gravel, With Silt Seams, Possible Cobbles and Boulders, Moist to Damp, Very Dense								3	
7 SS	9	28 50/5"	R	15			SP							2	
8 SS	7	22 50/3"	R		955										
				20		20 (952)								2	

End of Boring at 20.0 ft.






WATER & CAVE-IN OBSERVATION DATA					
	WATER ENCOUNTERED DURING DRILLING: NE			CAVE DEPTH AT COMPLETION: 4ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE			CAVE DEPTH AFTER 0 HOURS: N/A	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded		WET <input type="checkbox"/>
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.					

PROJECT NAME Great Water Alliance				BORING LOG			 		BORING No		CC-B-095	
PROJECT No 00521741									PAGE No		1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No			DATE STARTED 9/14/17			HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No			DATE COMPLETED 9/14/17			LATITUDE				
CREW CHIEF S. Briscoe		DRILLING RIG Truck #431			BORING OFFSET			LONGITUDE				
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3 1/4 HSA			ROADWAY NAME Racine Avenue			NORTHING 350202.49				
LOG QC BY B. Broback		HAMMER TYPE Auto	EFFICIENCY 90%	STATION		OFFSET	EASTING 2493049.56					
COUNTY		TOWNSHIP	RANGE	SECTION		1/4 SECTION	1/4 SECTION	SURFACE ELEVATION 987 ft				

Sample No. / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q _u (tsf)	Unconfined Comp. Strength Q _u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil (4"± Thick)	OL							16	
1 SS	8	22 24 14	38		985	Light Brown Silty Sand and Gravel, Possible Cobbles and Boulders, Moist to Wet, Medium Dense to Very Dense								6	
2 SS	10	9 12 11	23	5										9	
3 SS	9	13 34 30	64		980									6	
4 SS	12	30 34 27	61	10			SM							8	
5 SS	4	20 20 50/2"	R		975									7	
6 SS	10	8 17 20	37	15										8	
					970										
						Gray Silty Sand and Gravel, Possible Cobbles and Boulders, Very Moist, Dense									
7 SS	12	19 20 28	48	20			SM			2				6	

End of Boring at 20.0 ft.






WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 13ft.		CAVE DEPTH AT COMPLETION: 10ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>




NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.






Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft) Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
					Topsoil Fill (3"± Thick)	OL							16	
1 SS	7	8 5 4	9		0.3 (964.7) Fill, Brown Sand and Gravel, With Sandy Clay Pockets, Moist	SP							6	
					3 (962)									
2 SS	8	3 3 11	14	5 960	Fill, Brown and Gray Sandy Lean Clay, With Gravel, Moist	CL			1.5				12	
3 SS	6	4 5 11	16						1.25	1.9			6	
					8 (957)									
4 SS	12	8 21 14	35	10 955	Fill, Gray and Brown Silty Sand and Gravel, Moist	SM							6	
					10.5 (954.5)									
5 SS	11	2 3 3	6		Brown Lean Clay, Trace Sand and Gravel, Very Moist, Soft to Very Stiff				2.5				20	
6 SS	10	2 2 2	4	15 950		CL			0.25				25	
					17 (948)									
					Brown Silty Sand and Gravel, Possible Cobbles and Boulders, Moist, Very Dense									
7 SS	9	11 42 36	78	20 945		SM							2	
					20 (945)									

WATER & CAVE-IN OBSERVATION DATA






	WATER ENCOUNTERED DURING DRILLING: NE		CAVE DEPTH AT COMPLETION: 7ft.	WET <input type="checkbox"/> DRY <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET <input type="checkbox"/> DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A	NE = Not Encountered; NMR = No Measurement Recorded		




NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-097	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/20/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 9/20/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG CME ATV #383		BORING OFFSET		NORTHING 351544.45		EASTING 2493036.19			
CREW CHIEF S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Racine Avenue		STATION		OFFSET			
FIELD LOG BY V. Jones		HAMMER TYPE Auto		EFFICIENCY 90%		SURFACE ELEVATION 940 ft					
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
COUNTY											

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil (3"± Thick)	OL								
1	4	3	6			0.3 (939.7)									
SS		3				Reddish Brown Sandy Lean Clay, With Gravel, Very Moist, Stiff	CL			2.0	1.65			18	
		3													
2	6	2	5												
SS		3													
		2		5	935					1.25				24	
						5.5 (934.5)									
						Reddish Brown Silty Sand and Gravel, Moist, Dense	SM							6	
3	8	4	34												
SS		16													
		18				8 (932)									
						Brown Silty Sand, With Silt Seams, Moist, Medium Dense	SM							18	
4	10	4	20												
SS		8													
		12				10.5 (929.5)								7	
						Brown Silty Sand and Gravel, With Silt Seams, Possible Cobbles and Boulders, Moist, Medium Dense to Extremely Dense									
5	12	6	28												
SS		10													
		18													
7	14	30	46											6	
SS		22													
		24		15	925		SM								
8	9	34	82											8	
SS		42													
		40		20	920										
						20 (920)									

End of Boring at 20.0 ft.




WATER & CAVE-IN OBSERVATION DATA					
	WATER ENCOUNTERED DURING DRILLING: NE			CAVE DEPTH AT COMPLETION: 14ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE			CAVE DEPTH AFTER 0 HOURS: N/A	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded		
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.					

PROJECT NAME Great Water Alliance				BORING LOG		 		BORING No CC-B-098	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 10/03/17		PAGE No 1 of 1		HORIZONTAL DATUM NAD 27	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 10/03/17		LATITUDE		VERTICAL DATUM NGVD 29	
DRILLING CONTRACTOR PSI		DRILLING RIG Truck #431		BORING OFFSET		LONGITUDE			
CREW CHIEF S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Racine Avenue		NORTHING 352533.26			
FIELD LOG BY V. Jones		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		EASTING 2493061.37	
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		SURFACE ELEVATION 935 ft	

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	6	12 16 16	32			Asphalt (2"± Thick) 0.2 (934.8)								5	
						Aggregate Base, Gray Crushed Stone, Moist (22"± Thick) 2 (933)								1	
						Brown Lean Clay, Moist, Very Stiff	CL			2.25	2.14			24	
2 SS	8	3 4 4	8	5	930										
						5.5 (929.5)									
3 SS	9	3 4 3	7			Brown Sandy Silt and Gravel, Very Moist, Loose to Dense								11	
4 SS	12	8 10 9	19	10	925									10	
5 SS	13	8 15 18	33				ML							9	
6 SS	13	11 12 12	24	15	920									8	
						17 (918)									
						Brown Silty Fine Sand and Gravel, Possible Cobbles and Boulders, Moist, Very Dense									
7 SS	8	12 50/2"	R	20	915		SM							4	
						20 (915)									

End of Boring at 20.0 ft.






WATER & CAVE-IN OBSERVATION DATA					
<input checked="" type="checkbox"/>	WATER ENCOUNTERED DURING DRILLING:	NE	<input checked="" type="checkbox"/>	CAVE DEPTH AT COMPLETION: 8ft.	WET <input type="checkbox"/>
<input checked="" type="checkbox"/>	WATER LEVEL AT COMPLETION:	NE	<input checked="" type="checkbox"/>	CAVE DEPTH AFTER 0 HOURS: N/A	WET <input type="checkbox"/>
<input checked="" type="checkbox"/>	WATER LEVEL AFTER 0 HOURS:	N/A		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>
NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.					

PROJECT NAME Great Water Alliance				BORING LOG			 		BORING No		CC-B-099	
PROJECT No 00521741									PAGE No		1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No			DATE STARTED 9/21/17			HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No			DATE COMPLETED 9/21/17			LATITUDE				
CREW CHIEF S. Briscoe		DRILLING RIG Truck #431			BORING OFFSET			LONGITUDE				
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3¼ HSA			ROADWAY NAME Racine Avenue			NORTHING 353283.33				
LOG QC BY B. Broback		HAMMER TYPE Auto	EFFICIENCY 90%	STATION		OFFSET	EASTING 2493035.33					
COUNTY		TOWNSHIP	RANGE	SECTION		1/4 SECTION	1/4 SECTION	SURFACE ELEVATION 916 ft				




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






End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

WATER & CAVE IN OBSERVATION DATA				
	WATER ENCOUNTERED DURING DRILLING: 13ft.		CAVE DEPTH AT COMPLETION: 12ft.	WET DRY <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-100	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/21/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 9/21/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG CME ATV #383		BORING OFFSET		NORTHING 354056		EASTING 2493016.6			
CREW CHIEF S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Racine Avenue		STATION		OFFSET			
FIELD LOG BY V. Jones		HAMMER TYPE Auto		EFFICIENCY 90%		SURFACE ELEVATION 911 ft					
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
COUNTY											




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
					910	Topsoil (4"± Thick)	OL							11	
1	7	2 2 3	5			Brown Lean Clay, Trace Sand and Gravel, Very Moist, Stiff	CL			1.25				26	
						3 (908)									
2	6	2 3 2	5			Brown Sandy Lean Clay, Very Moist, Medium Stiff to Stiff	CL			1.25	0.99			18	
				5											
					905	5.5 (905.5)									
3	10	12 22 38	60			Brown Silty Sand and Gravel, Possible Cobbles and Boulders, Moist to Wet, Medium Dense to Very Dense								4	
4	12	13 23 20	43		10									6	
5	2	12 14 20	34		900		SM							4	
6	9	8 10 12	22		15									23	
					895										
						17 (894)									
						Brown Medium to Coarse Sand and Gravel, Trace Silt, Wet, Dense									
7	11	12 20 16	36		20		SP							16	
						20 (891)									









End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 13ft.		CAVE DEPTH AT COMPLETION: 10ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	DRY <input type="checkbox"/>






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-101	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/21/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No		DATE COMPLETED 9/21/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No		ROADWAY NAME Racine Avenue		NORTHING 354795.07		EASTING 2492996.71			
CREW CHIEF S. Briscoe		DRILLING RIG Truck #431		STATION		OFFSET		SURFACE ELEVATION 911 ft			
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		HAMMER TYPE Auto		EFFICIENCY 90%					
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q _u (tsf)	Unconfined Comp. Strength Q _u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
					910	Topsoil (4"± Thick)	OL								
1	5	2	5			Brown Lean Clay, Moist, Very Stiff	CL			2.75	2.89			19	
						3 (908)									
2	7	3	9			Brown and Gray Mottled Lean Clay, With Silt Seams, Moist, Stiff to Very Stiff	CL			2.5	1.81			17	
				5											
					905	Light Brown Silt, Wet, Medium Dense	ML							20	
3	10	3	13												
						8 (903)									
4	12	3	14			Brown and Gray Mottled Lean Clay, With Silt Seams, Very Moist, Very Stiff	CL			2.0	3.46			25	
				10											
					900	Gray Silt, With Clay Seams, Very Moist, Medium Dense	ML							20	
5	11	5	16												
						13 (898)									
7	10	5	15			Gray Lean Clay, With Silt Seams, Very Moist, Stiff				2.0	1.65			22	
				15											
					895		CL								
8	13	5	11							1.75	1.73			21	
				20											
						20 (891)									

End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 5.5ft.		CAVE DEPTH AT COMPLETION: 14ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A	NE = Not Encountered; NMR = No Measurement Recorded		WET <input type="checkbox"/>
DRY <input type="checkbox"/>				

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-102	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/13/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 9/13/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG Truck #431		ROADWAY NAME Racine Avenue		NORTHING 355687.81		EASTING 2492976.61			
CREW CHIEF S. Briscoe		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		OFFSET			
FIELD LOG BY V. Jones		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
LOG QC BY B. Broback		SURFACE ELEVATION 915 ft									




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil (2"± Thick)	OL								
1 SS	8	2 2 3	5			0.2 (914.8) Brown Lean Clay, Trace Sand, Very Moist, Stiff	CL			1.75	1.9			22	
2 SS	4	4 3 5	8	5	910	5.5 (909.5) Brown Sandy Silt, With Gravel and Sand Seams, Very Moist to Moist, Medium Dense	ML			1.5				20	
3 SS	7	3 4 16	20											13	
4 SS	12	7 8 8	16	10	905	10.5 (904.5) Brown Medium Sand, With Silty Sand Seams, Trace Gravel, Moist, Medium Dense	SP							12	
5 SS	14	8 10 9	19											8	
6 SS	16	6 8 8	16	15	900									5	
7 SS	3	4 6 6	12	20	895	20 (895)									








Boring offset 12' east due to below grade gas main
End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

<input checked="" type="checkbox"/>	WATER ENCOUNTERED DURING DRILLING: NE	<input checked="" type="checkbox"/>	CAVE DEPTH AT COMPLETION: 9ft.	WET <input type="checkbox"/>
<input checked="" type="checkbox"/>	WATER LEVEL AT COMPLETION: NE	<input checked="" type="checkbox"/>	CAVE DEPTH AFTER 0 HOURS: N/A	WET <input type="checkbox"/>
<input checked="" type="checkbox"/>	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG			 		BORING No CC-B-103	
PROJECT No 00521741									PAGE No 1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No			DATE STARTED 10/02/17			HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No			DATE COMPLETED 10/02/17			LATITUDE		
CREW CHIEF S. Briscoe		DRILLING RIG Truck #431			BORING OFFSET			LONGITUDE		
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3¼ HSA			ROADWAY NAME Racine Avenue			NORTHING 356403.23		
LOG QC BY B. Broback		HAMMER TYPE Auto	EFFICIENCY 90%	STATION		OFFSET	EASTING 2492819.08			
COUNTY		TOWNSHIP	RANGE	SECTION	1/4 SECTION		1/4 SECTION	SURFACE ELEVATION 917 ft		




Sample No. / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q _u (tsf)	Unconfined Comp. Strength Q _u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Asphalt (5"± Thick)									
1 SS	5	6 8 13	21		915	Aggregate Base, Brown Crushed Sand and Gravel, Moist (4"± Thick)									2
						Fill, Brown and Gray Lean Clay, Trace to With Sand and Gravel, With Sand Pockets, Very Moist to Moist				1.25		33	19	12	
2 SS	7	8 5 5	10		5		CL			1.25		33	19	22	
3 SS	6	3 3 4	7		910										
											0.62	33	19	16	
4 SS	10	3 4 5	9		10	Fill, Brown and Gray Silty Clay, With Sand and Gravel, Very Moist	CL-ML								
						Dark Brown Silty Clay, Trace Sand and Gravel, Very Moist, Soft	CL-ML			0.5				21	
5 SS	12	11 10 20	30		905	Brown Medium to Coarse Sand and Gravel, With Clay Seams, Moist, Medium Dense								4	
6 SS	14	12 12 8	20		15		SW							5	
					900	Gray Silt, Wet, Medium Dense									
7 SS	13	7 7 7	14		20		ML							24	









End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

WATER & CAVE IN OBSERVATION DATA				
	WATER ENCOUNTERED DURING DRILLING: 17ft.		CAVE DEPTH AT COMPLETION: 9ft.	WET DRY <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	




NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-104	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/13/17		PAGE No 1 of 1		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 9/13/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG Truck #431		ROADWAY NAME Racine Avenue		NORTHING 357093.53		EASTING 2492375.76			
CREW CHIEF S. Briscoe		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		OFFSET		SURFACE ELEVATION 915 ft	
FIELD LOG BY V. Jones		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
LOG QC BY B. Broback											




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil Fill (3"± Thick)	OL								
1	6	2	5			Fill, Brown and Dark Brown Lean Clay, With Sand and Gravel, Very Moist	CL			0.75				20	
		3													
						3 (912)									
2	7	3	6			Brown Lean Clay, Trace Sand and Gravel, Very Moist, Stiff	CL			2.0	1.24			22	
		3			5										
					910										
						5.5 (909.5)									
3	10	6	14			Brown and Gray Mottled Lean Clay, With Sand and Silt Seams, Moist, Very Stiff to Hard	CL			4.5		41	26	16	
		8													
4	12	4	14							3.5	2.8			17	
		6			10										
		8			905										
						10.5 (904.5)									
5	11	4	20			Light Brown Silty Fine Sand, Wet, Medium Dense								19	
		9													
		11													
6	14	6	18				SM							20	
		8			15										
		10			900										
						17 (898)									
						Gray Silty Fine Sand, Wet, Medium Dense									
7	10	5	11				SM							16	
		5			20										
		6			895										
						20 (895)									





Boring offset 10' east due to below grade gas main
End of Boring at 20.0 ft.






WATER & CAVE-IN OBSERVATION DATA

▼	WATER ENCOUNTERED DURING DRILLING: 10.5ft.		CAVE DEPTH AT COMPLETION: 10ft.	WET <input type="checkbox"/>
▼	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	DRY <input type="checkbox"/>
▼	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>




NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.






PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-105	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/22/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 9/22/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG CME ATV #383		BORING OFFSET		NORTHING 357743.63		EASTING 2492035.11			
CREW CHIEF S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Racine Avenue		STATION		OFFSET			
FIELD LOG BY V. Jones		HAMMER TYPE Auto		EFFICIENCY 90%		SURFACE ELEVATION 917 ft					
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
COUNTY											

Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q _u (tsf)	Unconfined Comp. Strength Q _u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil (4"± Thick)	OL								
1	5	3	6		915	Brown and Gray Mottled Lean Clay, Trace to With Sand and Gravel, Very Moist, Stiff to Very Stiff	CL			2.75	1.9			25	
2	8	2	5	5						1.25	1.03			24	
						5.5 (911.5)									
3	10	6	16		910	Brown Medium to Coarse Sand and Gravel, Trace to With Silt, Very Moist to Wet, Medium Dense to Dense								12	
4	9	10	24	10										13	
5	12	8	20		905		SP-SM							15	P ₁₀ = 46.1% P ₆₀ = 23.7% P ₂₀₀ = 14.6%
7	5	10	28	15											
					900										
8	14	11	35	20										12	
					20	End of Boring at 20.0 ft.									

WATER & CAVE-IN OBSERVATION DATA												
	WATER ENCOUNTERED DURING DRILLING: 8ft.						CAVE DEPTH AT COMPLETION: 10ft.					WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE						CAVE DEPTH AFTER 0 HOURS: N/A					WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A						NE = Not Encountered; NMR = No Measurement Recorded					WET <input type="checkbox"/>






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG		 		BORING No CC-B-106	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/22/17		PAGE No 1 of 1		HORIZONTAL DATUM NAD 27	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 9/22/17		LATITUDE		VERTICAL DATUM NGVD 29	
DRILLING CONTRACTOR PSI		DRILLING RIG CME ATV #383		BORING OFFSET		LONGITUDE			
CREW CHIEF S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Racine Avenue		NORTHING 358418.77			
FIELD LOG BY V. Jones		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		EASTING 2491611.26	
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		SURFACE ELEVATION 922 ft	




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil (4"± Thick)	OL								
1	6	3 4 6	10		920	0.3 (921.7) Fill, Brown and Dark Brown Lean Clay, With Sand and Gravel, Very Moist	CL			0.75	1.40	49	30	19	
						3 (919) Brown Sandy Lean Clay, With Gravel, Very Moist, Stiff to Very Stiff	CL			2.5	1.81	49	30	25	
2	10	2 3 4	7		5	5.5 (916.5) Brown Silty Sand and Gravel, Moist to Wet, Medium Dense	SM								
3	5	3 5 6	11		915										
4	10	3 6 8	14		10	10.5 (911.5) Light Brown Silty Fine Sand, With Silty Clay and Sand Seams, Wet, Medium Dense	SM								
5	7	8 12 14	26		910										
6	8	6 8 8	16		15										
					905										
7	12	6 8 10	18		20	20 (902)									

End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 10ft.		CAVE DEPTH AT COMPLETION: 13ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG			 		BORING No		CC-B-107	
PROJECT No 00521741									PAGE No		1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No			DATE STARTED 10/02/17			HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No			DATE COMPLETED 10/02/17			LATITUDE				
CREW CHIEF S. Briscoe		DRILLING RIG Truck #431			BORING OFFSET			LONGITUDE				
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3 1/4 HSA			ROADWAY NAME Racine Avenue			NORTHING 359026.08				
LOG QC BY B. Broback		HAMMER TYPE Auto	EFFICIENCY 90%	STATION		OFFSET	EASTING 2491219.98					
COUNTY		TOWNSHIP	RANGE	SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 951 ft		




[illegible]

End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: NE		CAVE DEPTH AT COMPLETION: 10ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-108	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 10/02/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 10/02/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG Truck #431		BORING OFFSET		NORTHING 359527.16		EASTING 2490690.17			
CREW CHIEF S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Racine Avenue		STATION		OFFSET			
FIELD LOG BY V. Jones		HAMMER TYPE Auto		EFFICIENCY 90%		SURFACE ELEVATION 980 ft					
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
COUNTY											




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	5	3 6 5	11			Asphalt (5"± Thick) 0.4 (979.6)								4	
						Aggregate Base, Brown Crushed Sand and Gravel, Moist (4"± Thick) 0.8 (979.2)	ML							8	
						Fill, Light Brown Sandy Silt and Gravel, Very Moist 3 (977)									
2 SS	7	3 3 4	7	5	975	Brown Lean Clay, Very Moist to Moist, Stiff	CL			1.0	1.90			26	
3 SS	2	3 4 4	8											15	
						8 (972)									
4 SS	10	3 4 3	7	10	970	Brown Sandy Silt and Gravel, Very Moist, Loose	ML							12	
						10.5 (969.5)									
5 SS	14	9 12 31	43			Light Brown Silty Fine Sand and Gravel, Possible Cobbles and Boulders, Very Moist to Moist, Dense to Very Dense								8	
6 SS	15	16 31 32	63	15	965		SM							5	
7 SS	10	31 42 50/5"	R	20	960									7	
						20 (960)									







End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

<input checked="" type="checkbox"/>	WATER ENCOUNTERED DURING DRILLING: NE	<input checked="" type="checkbox"/>	CAVE DEPTH AT COMPLETION: 11ft.	WET <input type="checkbox"/>
<input checked="" type="checkbox"/>	WATER LEVEL AT COMPLETION: NE	<input checked="" type="checkbox"/>	CAVE DEPTH AFTER 0 HOURS: N/A	DRY <input type="checkbox"/>
<input checked="" type="checkbox"/>	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>
				DRY <input type="checkbox"/>






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-109	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/13/17		PAGE No 1 of 1		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No		DATE COMPLETED 9/13/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No		BORING OFFSET		NORTHING 359967.71		EASTING 2490082.11			
CREW CHIEF S. Briscoe		DRILLING RIG Truck #431		ROADWAY NAME Racine Avenue		SURFACE ELEVATION 978 ft					
FIELD LOG BY S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		STATION		OFFSET					
LOG QC BY B. Broback		HAMMER TYPE Auto		EFFICIENCY 90%							
COUNTY		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil Fill (3"± Thick)	OL								
1	7	2	4		975	0.3 (977.7) Fill, Brown Sandy Lean Clay, With Gravel, Very Moist	CL			1.75				17	
2	9	2	5	5		3 (975) Grayish Brown Lean Clay, Very Moist, Stiff to Very Stiff	CL			2.5	1.98			26	
3	10	3	7		970	5.5 (972.5) Light Brown and Gray Mottled to Brown Sandy Silt, With Sand Seams, Wet, Loose to Medium Dense	ML							14	
4	12	4	11	10		10.5 (967.5) Brown Medium to Coarse Sand and Gravel, With Silt Seams, Wet, Medium Dense	SW							21	
5	9	9	21		965									17	
6	11	6	19	15										21	
					960	17 (961) Gray Lean Clay, Trace to With Sand and Gravel, With Silt Lenses, Very Moist, Hard	CL							15	
7	13	10	27	20		20 (958)									

End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 5.5ft.		CAVE DEPTH AT COMPLETION: 11ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	DRY <input type="checkbox"/>






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG			 		BORING No CC-B-110	
PROJECT No 00521741									PAGE No 1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No			DATE STARTED 9/13/17			HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No			DATE COMPLETED 9/13/17			LATITUDE		
CREW CHIEF S. Briscoe		DRILLING RIG Truck #431			BORING OFFSET			LONGITUDE		
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3 1/4 HSA			ROADWAY NAME Racine Avenue			NORTHING 360432.02		
LOG QC BY B. Broback		HAMMER TYPE Auto	EFFICIENCY 90%		STATION		OFFSET	EASTING 2489444.03		
COUNTY		TOWNSHIP	RANGE	SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 977 ft




Sample No. / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q _u (tsf)	Unconfined Comp. Strength Q _u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil Fill (12"± Thick)									
1 SS	6	2 2 3	5		975	1 (976) Fill, Brown and Light Brown Silty Clay, With Silt and Crushed Stone, Very Moist	OL							6	
						3 (974) Brown Lean Clay, Trace Gray Mottling, Trace Sand and Gravel, Moist, Medium Stiff	CL-ML							15	
2 SS	10	2 3 4	7		5		CL							23	
						5.5 (971.5) Light Brown and Gray Mottled Lean Clay, Very Moist to Wet, Soft to Medium Stiff									
3 SS	9	2 2 2	4		970		CL-ML		0.5	0.66	31	11	25		
4 SS	11	2 1 4	5		10				0.5	0.45	31	11	36		
						10.5 (966.5) Brown Lean Clay, With Silt Lenses and Seams, Very Moist, Stiff									
5 SS	12	3 3 6	9		965		CL		1.0	1.32			25		
						13 (964) Brown Silty Sand and Gravel, Possible Cobbles and Boulders, Moist, Dense								8	
7 SS	15	5 22 23	45		15		SM								
						17 (960) Brown Sandy Silt, With Gravel, Moist, Medium Dense									
8 SS	13	6 13 16	29		20	20 (957)	ML							11	

Boring offset 17' south due to below grade gas line
End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 8ft.		CAVE DEPTH AT COMPLETION: 5ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG			 		BORING No		CC-B-111	
PROJECT No 00521741									PAGE No		1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No			DATE STARTED 9/22/17			HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No			DATE COMPLETED 9/22/17			LATITUDE				
CREW CHIEF S. Briscoe		DRILLING RIG CME ATV #383			BORING OFFSET			LONGITUDE				
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3¼ HSA			ROADWAY NAME Racine Avenue			NORTHING 360854.31				
LOG QC BY B. Broback		HAMMER TYPE Auto	EFFICIENCY 90%	STATION		OFFSET	EASTING 2488823.21					
COUNTY		TOWNSHIP	RANGE	SECTION		1/4 SECTION	1/4 SECTION	SURFACE ELEVATION 975 ft				




[illegible]









End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

WATER & CAVE IN OBSERVATION DATA						
	WATER ENCOUNTERED DURING DRILLING: 10.5ft.			CAVE DEPTH AT COMPLETION: 9ft.		WET DRY <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE			CAVE DEPTH AFTER 0 HOURS: N/A		WET DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded			






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-112	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/21/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 9/21/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG CME ATV #383		BORING OFFSET		NORTHING 361350.93		EASTING 2488093.61			
CREW CHIEF S. Briscoe		DRILLING METHOD / HOLE SIZE 3 1/4 HSA		ROADWAY NAME Racine Avenue		STATION		OFFSET			
FIELD LOG BY V. Jones		HAMMER TYPE Auto		EFFICIENCY 90%		SURFACE ELEVATION 993 ft					
LOG QC BY B. Broback		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
COUNTY											




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil Fill (3"± Thick)	OL								
1	6	8 26 50/3"	R			Fill, Brown Silty Sand, With Silt and Clay Pockets, With Crushed Stone, Moist	SM								7
					990										
						3 (990)									
2	7	2 4 10	14			Light Brown Sandy Silt and Gravel, Trace Clay, Very Moist, Medium Dense								9	
					5										
3	10	3 7 10	17				ML							10	
					985										
4	12	4 6 10	16											10	
					10										
5	14	4 6 7	13			Gray Sandy Silt and Gravel, Trace Clay, Very Moist to Wet, Medium Dense								11	
					980										
7	15	5 7 8	15				ML							13	
					15										
					975										
8	12	5 6 7	13											9	
					20										
						20 (973)									









Boring offset 10' east due to below grade gas line
End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 13ft.		CAVE DEPTH AT COMPLETION: 11ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	DRY <input type="checkbox"/>

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-113	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/19/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		PAGE No 1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 9/19/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG CME ATV #383		ROADWAY NAME Racine Avenue		NORTHING 361870.38		EASTING 2487407.94			
CREW CHIEF S. Briscoe		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		OFFSET			
FIELD LOG BY V. Jones		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
LOG QC BY B. Broback		SURFACE ELEVATION 962 ft									




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
						Topsoil Fill (6"± Thick)	OL								
1	7	1	3		960	Fill, Brown and Light Brown Sandy Lean Clay, With Sandy Silt Pockets, With Gravel, Very Moist	CL			0.25	0.49			9	
														21	
						3 (959)									
2	1	2	5		5	Fill, Brown Sandy Silt, With Gravel, Moist	ML								
						5.5 (956.5)									
3	9	20	34		955	Light Brown Silty Fine Sand and Gravel, Moist to Very Moist, Medium Dense to Dense	SM							7	
4	6	11	21		10									8	
						10.5 (951.5)									
5	5	12	30		950	Brown Sandy Silt and Gravel, Possible Cobbles and Boulders, Moist to Very Moist, Dense to Very Dense								8	
6	12	16	R		15		ML							9	
						17 (945)									
						Light Brown Silty Fine Sand and Gravel, Possible Cobbles and Boulders, Moist, Very Dense									
7	5	28	R		20		SM								
						20 (942)									

Boring offset from pavement to the shoulder due to safety concerns
End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

<input checked="" type="checkbox"/>	WATER ENCOUNTERED DURING DRILLING: NE	<input checked="" type="checkbox"/>	CAVE DEPTH AT COMPLETION: 13ft.	WET <input type="checkbox"/>
<input checked="" type="checkbox"/>	WATER LEVEL AT COMPLETION: NE	<input checked="" type="checkbox"/>	CAVE DEPTH AFTER 0 HOURS: N/A	WET <input type="checkbox"/>
<input checked="" type="checkbox"/>	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG			 		BORING No		CC-B-114	
PROJECT No 00521741									PAGE No		1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No			DATE STARTED 9/15/17			HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No			DATE COMPLETED 9/15/17			LATITUDE				
CREW CHIEF S. Briscoe		DRILLING RIG Truck #431			BORING OFFSET			LONGITUDE				
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3 1/4 HSA			ROADWAY NAME Racine Avenue			NORTHING 362384.51				
LOG QC BY B. Broback		HAMMER TYPE Auto	EFFICIENCY 90%		STATION		OFFSET	EASTING 2486746.31				
COUNTY		TOWNSHIP	RANGE	SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 943 ft		




[illegible]

End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

WATER & CAVE IN OBSERVATION DATA				
	WATER ENCOUNTERED DURING DRILLING: 17ft.		CAVE DEPTH AT COMPLETION: 10ft.	WET DRY <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A	NE = Not Encountered; NMR = No Measurement Recorded		






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG			 		BORING No		CC-B-115	
PROJECT No 00521741									PAGE No		1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No			DATE STARTED 9/19/17			HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No			DATE COMPLETED 9/19/17			LATITUDE				
CREW CHIEF S. Briscoe		DRILLING RIG CME ATV #383			BORING OFFSET			LONGITUDE				
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3¼ HSA			ROADWAY NAME Racine Avenue			NORTHING 362921.84				
LOG QC BY B. Broback		HAMMER TYPE Auto	EFFICIENCY 90%		STATION		OFFSET	EASTING 2486169.97				
COUNTY		TOWNSHIP	RANGE	SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 971 ft		




[illegible]

End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

WATER & CAVE IN OBSERVATION DATA				
	WATER ENCOUNTERED DURING DRILLING: NE		CAVE DEPTH AT COMPLETION: 12ft.	WET DRY <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A	NE = Not Encountered; NMR = No Measurement Recorded		






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG			 		BORING No		CC-B-116	
PROJECT No 00521741									PAGE No		1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No			DATE STARTED 9/13/17			HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No			DATE COMPLETED 9/13/17			LATITUDE				
CREW CHIEF S. Briscoe		DRILLING RIG Truck #431			BORING OFFSET			LONGITUDE				
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3 1/4 HSA			ROADWAY NAME Racine Avenue			NORTHING 363348.71				
LOG QC BY B. Broback		HAMMER TYPE Auto	EFFICIENCY 90%	STATION		OFFSET	EASTING 2485549.79					
COUNTY		TOWNSHIP	RANGE	SECTION		1/4 SECTION	1/4 SECTION	SURFACE ELEVATION 973 ft				




[illegible]


End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: NE		CAVE DEPTH AT COMPLETION: 10ft.	WET DRY <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A	NE = Not Encountered; NMR = No Measurement Recorded		






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG						BORING No CC-B-117	
PROJECT No 00521741		CONSULTANT PROJECT No		DATE STARTED 9/15/17		HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29		1 of 1	
CONSULTANT Greeley-Hansen		DRILLING CONTRACTOR PROJECT No		DATE COMPLETED 9/15/17		LATITUDE		LONGITUDE			
DRILLING CONTRACTOR PSI		DRILLING RIG Truck #431		ROADWAY NAME Racine Avenue		NORTHING 363851.72		EASTING 2484908.09			
CREW CHIEF S. Briscoe		HAMMER TYPE Auto		EFFICIENCY 90%		STATION		OFFSET			
FIELD LOG BY V. Jones		TOWNSHIP		RANGE		SECTION		1/4 SECTION		1/4 SECTION	
LOG QC BY B. Broback		SURFACE ELEVATION 963 ft									




Sample No / Type	Sample Recovery (in)	Blow Counts	N - Value	Depth (ft)	Elevation (ft)	Soil / Rock Description and Geological Origin for Each Major Unit / Comments	USCS / AASHTO	Graphic	Well Diagram	Unconfined Comp. Strength Q_u (tsf)	Unconfined Comp. Strength Q_u (tsf)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Notes
1 SS	6	4 5 8	13			Topsoil Fill (5"± Thick) 0.4 (962.6) Fill, Brown Sandy Lean Clay, With Gravel, Moist	OL CL							12	
2 SS	8	4 6 5	11	5	960	3 (960) Light Brown Silty Sand and Gravel, Possible Cobbles and Boulders, Moist to Wet, Medium Dense to Very Dense								9	
3 SS	4	6 8 17	25		955									8	
4 SS	0	28 46 50/4"	R	10											
5 SS	0	30 28 32	60		950		SM								
6 SS	8	26 30 40	70	15										7	
7 SS	2	36 50/3"	R		945										
				20		20 (943)									

Boring offset 10' east due to below grade gas main
End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: 17ft.		CAVE DEPTH AT COMPLETION: 9ft.	WET <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	WET <input type="checkbox"/>






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG			 		BORING No CC-B-118	
PROJECT No 00521741									PAGE No 1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No			DATE STARTED 10/02/17			HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No			DATE COMPLETED 10/02/17			LATITUDE		
CREW CHIEF S. Briscoe		DRILLING RIG Truck #431			BORING OFFSET			LONGITUDE		
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3 1/4 HSA			ROADWAY NAME Racine Avenue			NORTHING 364353.56		
LOG QC BY B. Broback		HAMMER TYPE Auto	EFFICIENCY 90%		STATION		OFFSET	EASTING 2484314.05		
COUNTY		TOWNSHIP	RANGE	SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 953 ft




[illegible]

Boring offset 10' east due to shoulder
End of Boring at 20.0 ft.

WATER & CAVE-IN OBSERVATION DATA

	WATER ENCOUNTERED DURING DRILLING: NE		CAVE DEPTH AT COMPLETION: 9ft.	WET <input type="checkbox"/> DRY <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET <input type="checkbox"/> DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A	NE = Not Encountered; NMR = No Measurement Recorded		






NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.

PROJECT NAME Great Water Alliance				BORING LOG			 		BORING No CC-B-119	
PROJECT No 00521741									PAGE No 1 of 1	
CONSULTANT Greeley-Hansen		CONSULTANT PROJECT No			DATE STARTED 9/15/17			HORIZONTAL DATUM NAD 27		VERTICAL DATUM NGVD 29
DRILLING CONTRACTOR PSI		DRILLING CONTRACTOR PROJECT No			DATE COMPLETED 9/15/17			LATITUDE		
CREW CHIEF S. Briscoe		DRILLING RIG Truck #431			BORING OFFSET			LONGITUDE		
FIELD LOG BY V. Jones		DRILLING METHOD / HOLE SIZE 3¼ HSA			ROADWAY NAME Racine Avenue			NORTHING 364799.64		
LOG QC BY B. Broback		HAMMER TYPE Auto	EFFICIENCY 90%		STATION		OFFSET	EASTING 2483727.19		
COUNTY		TOWNSHIP	RANGE	SECTION		1/4 SECTION		1/4 SECTION		SURFACE ELEVATION 921 ft

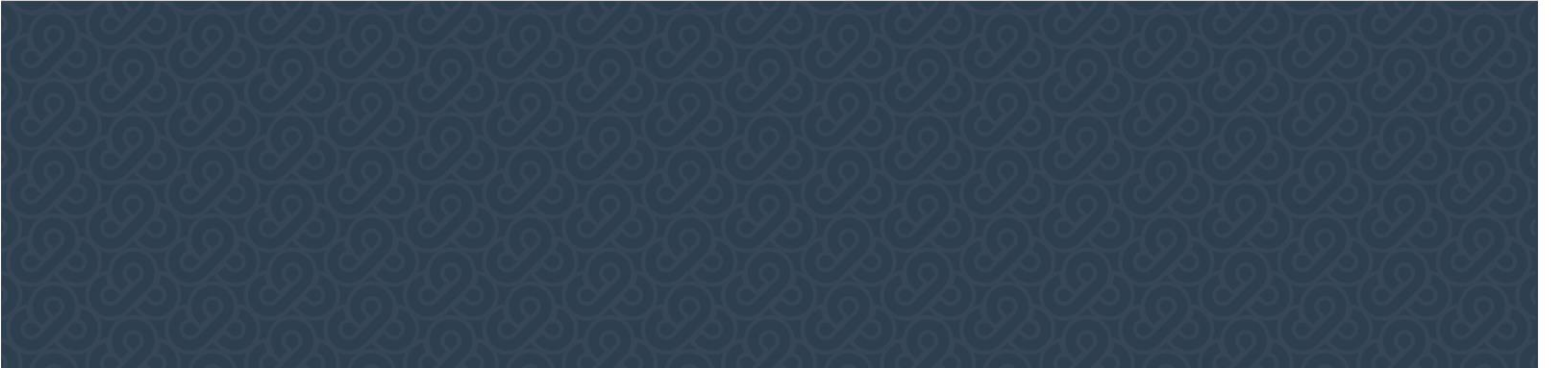
[illegible]

End of Boring at 20.0 ft.

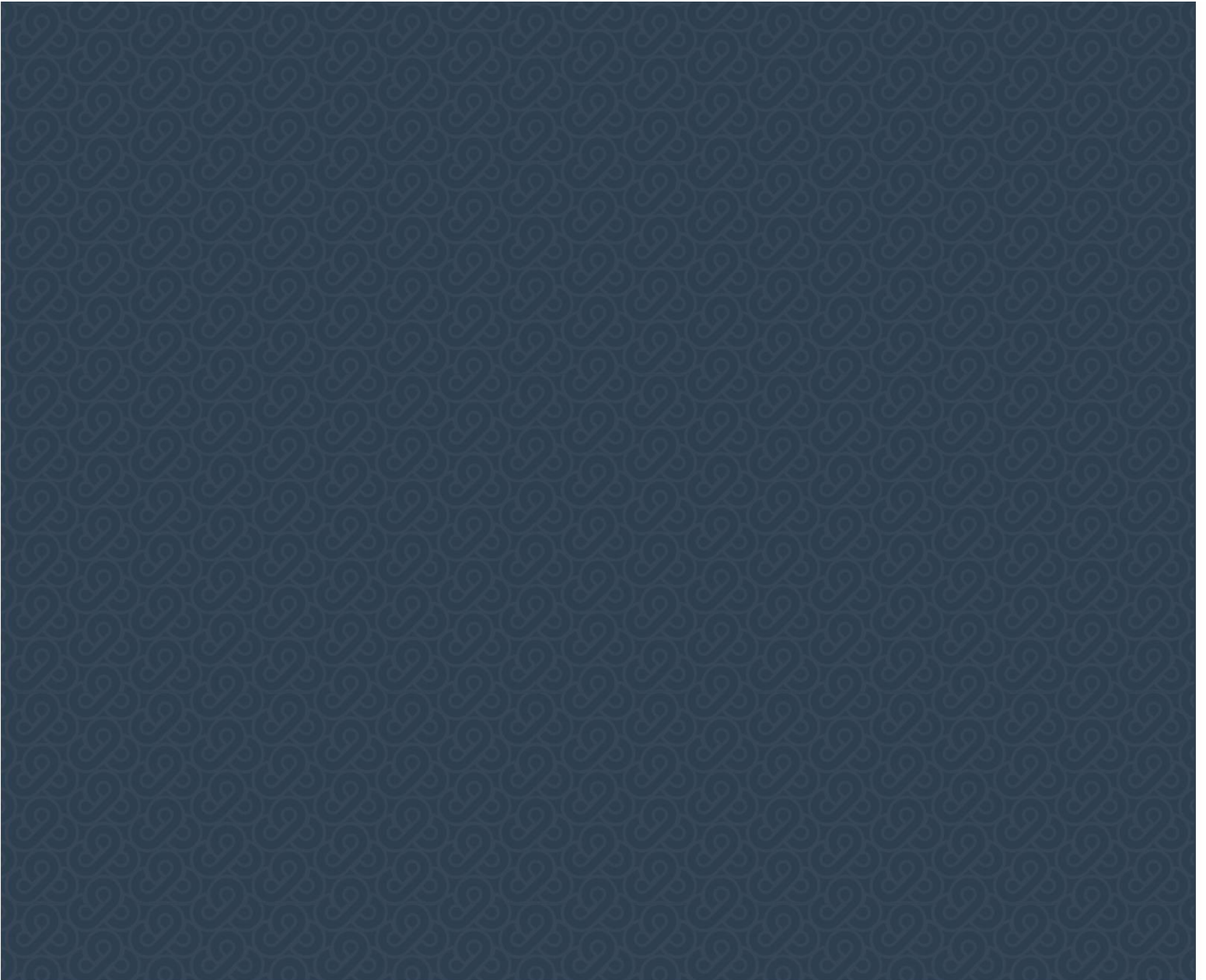
WATER & CAVE-IN OBSERVATION DATA

WATER & CAVE IN OBSERVATION DATA				
	WATER ENCOUNTERED DURING DRILLING: NE		CAVE DEPTH AT COMPLETION: 9ft.	WET DRY <input type="checkbox"/>
	WATER LEVEL AT COMPLETION: NE		CAVE DEPTH AFTER 0 HOURS: N/A	WET DRY <input type="checkbox"/>
	WATER LEVEL AFTER 0 HOURS: N/A		NE = Not Encountered; NMR = No Measurement Recorded	

NOTE: Stratification lines between soil types represent the approximate boundary; gradual transition between in-situ soil layers should be expected.



Appendix B - Summary Table of Contract Package 5 Borings and Anticipated Issues



(NO TEXT FOR THIS PAGE)

Great Water Alliance - Contract Package 5, Return Flow Pipeline Stations 2000+00 to 3000+00 Summary of Borings and Anticipated Issues

Boring No.	Utility Installation Method	Approx. Invert Elevation (MSL) (ft)	Approx. Ground Surface Elevation (MSL) (ft)	Estimated Pavement Thickness (Asphalt/Aggregate Base) (in)	Estimated Depth of Existing Fill/ Elevation at Bottom of Fill (ft)	Estimated Water Depth/Elevation During Drilling (ft)	Estimated Water Depth/Elevation Upon Completion of Drilling (ft)	Estimated Seasonal High Groundwater Elevation (ft)	Estimated Depth of Organic Fill/Natural Organic Soil (Elevation to Suitable Natural Soils) (ft)	Estimated Depth/Elevation of Very Dense Soils and/or Possible Cobbles and Boulders (ft)	Anticipated Issues*
CC-B-70	open cut	EL. 876	EL. 888	4.5/5	8/EL. 880	Not Obs	Not Obs	EL. 888	5.5/EL. 882.5 ^b		3, 7
CC-B-71	open cut	EL. 885	EL. 894	none		Not Obs	Not Obs	EL. 883.5			
CC-B-72	open cut	EL. 919	EL. 931	none	3/EL. 928	Not Obs	Not Obs	<EL. 911		3-20/EL. 928-911	2
CC-B-73	Jack/Bore	EL. 884	EL. 894	none		15/EL. 879 ^a	Not Obs	EL. 879		17-20/EL. 877-874 ^c	5 ^f
CC-B-74**	Jack/Bore										
CC-B-75**	open cut										
CC-B-76**	open cut										
CC-B-77**	open cut										
CC-B-78**	open cut										
CC-B-79**	open cut										
CC-B-80**	HDD										
CC-B-81**	HDD										
CC-B-81A**	open cut										
CC-B-82**	open cut										
CC-B-83**	open cut										
CC-B-84**	open cut										
CC-B-85**	open cut										
CC-B-86**	HDD										
CC-B-87**	HDD										
CC-B-88**	open cut										
CC-B-89**	open cut										
CC-B-89A**	Jack/Bore										
CC-B-90 ^e	Jack/Bore	EL. 851	EL. 871	none	17/EL. 854	Not Obs	Not Obs	<EL. 851		8-17/EL. 863-854	2
CC-B-91	open cut	EL. 859	EL. 870	none	5.5/EL. 864.5	5.5/EL. 864.5	Not Obs	EL. 864.5		13-20/EL. 857-850	1, 2, 6
CC-B-92	open cut	EL. 893	EL. 903	none		Not Obs	Not Obs	EL. 895		5.5-17/EL. 897.5-886	2
CC-B-93	open cut	EL. 912	EL. 922	6/3		5.5/EL. 916.5	Not Obs	EL. 916.5		13-20.5/EL. 909-901.5 ^c	1, 6
CC-B-94	open cut	EL. 962	EL. 972	none		Not Obs	Not Obs	<EL. 952		3-20/EL. 969-952	2
CC-B-95	open cut	EL. 974	EL. 987	none		13/EL. 974	Not Obs	EL. 974		5.5-13/EL. 981.5-974	1, 2, 6
CC-B-96	open cut	EL. 954	EL. 965	none	10.5/EL. 954.5	Not Obs	Not Obs	<EL. 945		17-20/EL. 948-945 ^c	5
CC-B-97	open cut	EL. 932	EL. 940	none		Not Obs	Not Obs	<EL. 920		17-20/EL. 927-923 ^c	

Great Water Alliance - Contract Package 5, Return Flow Pipeline Stations 2000+00 to 3000+00

Summary of Borings and Anticipated Issues

Boring No.	Utility Installation Method	Approx. Invert Elevation (MSL) (ft)	Approx. Ground Surface Elevation (MSL) (ft)	Estimated Pavement Thickness (Asphalt/Aggregate Base) (in)	Estimated Depth of Existing Fill/ Elevation at Bottom of Fill (ft)	Estimated Water Depth/ Elevation During Drilling (ft)	Estimated Water Depth/ Elevation Upon Completion of Drilling (ft)	Estimated Seasonal High Groundwater Elevation (ft)	Estimated Depth of Organic Fill/Natural Organic Soil (Elevation to Suitable Natural Soils) (ft)	Estimated Depth/Elevation of Very Dense Soils and/or Possible Cobbles and Boulders (ft)	Anticipated Issues*
CC-B-98	open cut	EL. 923	EL. 935	2/22		Not Obs	Not Obs	<EL. 915		17-20/EL. 918-915 ^c	
CC-B-99	open cut	EL. 907	EL. 916	none		13/EL. 903 ^a	Not Obs	EL. 903			
CC-B-100	open cut	EL. 903	EL. 911	none		13/EL. 898 ^a	Not Obs	EL. 898		5.5-8/EL. 905.5-903	2
CC-B-101	open cut	EL. 901	EL. 911	none		5.5/EL. 905.5	Not Obs	EL. 908			1, 5, 6
CC-B-102	open cut	EL. 904	EL. 915	none		Not Obs	Not Obs	<EL. 895			
CC-B-103	open cut	EL. 905	EL. 917	5/4	9.5/EL. 907.5	17/EL. 900	Not Obs	EL. 900			7
CC-B-104	open cut	EL. 906	EL. 915	none	3/EL. 912	10.5/EL. 904.5	Not Obs	EL. 909.5			1, 6
CC-B-105	open cut	EL. 907	EL. 917	none		8/EL. 909	Not Obs	EL. 909			1, 6
CC-B-106	open cut	EL. 915	EL. 922	none	3/EL. 919	10/EL. 912 ^a	Not Obs	EL. 912			
CC-B-107	open cut	EL. 943	EL. 951	none	3/EL. 948	Not Obs	Not Obs	<EL. 931		8-10.5/EL. 943-940.5	2
CC-B-108	open cut	EL. 968	EL. 980	5/4	3/EL. 977	Not Obs	Not Obs	<EL. 960		13-20/EL. 967-960	2
CC-B-109	open cut	EL. 971	EL. 978	none	3/EL. 975	5.5/EL. 972.5	Not Obs	EL. 978			1, 5, 6
CC-B-110	open cut	EL. 964	EL. 977	none	3/EL. 974	8/EL. 969	Not Obs	<EL. 957			1, 5, 7

*Issues estimated to be present which will affect construction of the utility:

1. Water estimated to be above or near invert elevations for open cut trenches or possibly above trenchless excavation invert elevations.
2. Very dense soils above or near estimated invert elevations for open cut trenches or possibly within the depth of trenchless excavation.
3. Organic soils present above the estimated invert elevations for open cut trenches, which are considered unsuitable for re-use as backfill.
4. Unsuitable organic soils below estimated invert elevations for open cut trenches or possibly below trenchless excavation invert elevations.
5. Possible unsuitable fill or natural soils below or near estimated invert elevations for open cut trenches or possibly below trenchless excavation invert elevations.
6. Recommended geotextile placement surrounding bedding on all sides to reduce potential for migration of finer soils into bedding.
7. Recommended geotextile placement along trench sides, above bedding due to soft, loose, or organic soils along trench sides.

**Boring not yet completed.

^a Water encountered is estimated to be below invert elevation.

^b Organic soils are estimated to be above the estimated invert elevations at this location, and not an issue for pipe bearing.

^c Very dense soils are estimated to be below the estimated invert elevation at this location, and not anticipated to be an issue.

^d HDD invert elevation represents the approximate lowest invert elevation through the installation length.

^e Boring does not extend to or below invert elevation.

^f Very soft silty clay soils may be present at roof of jack/bore installation.

Note: Bottom of pipe bedding elevation is estimated to be about 1 foot below estimated invert elevation.



Appendix C - Corrosivity to Steel

Pipe/DIP Testing



(NO TEXT FOR THIS PAGE)

Great Water Alliance - Contract Package 5, Return Flow Pipeline Stations 2000+00 to 3000+00

Corrosivity to PCCP Testing

Boring	Depth Below Existing Grade (ft)	Sulfate Content (ppm)	Exposure Category S ¹
CC-B-71	8.5-10, 11-12.5	14	S0
CC-B-73	6-7.5, 8.5-10, 11-12.5, 13.5-15	12	S0
CC-B-91	8.5-10, 11-12.5, 13.5-15	24	S0
CC-B-94	8.5-10, 11-12.5, 13.5-15	10	S0
CC-B-96	6-7.5, 11-12.5, 13.5-15	60	S0
CC-B-97	6-7.5, 8.5-10, 11-12.5	44	S0
CC-B-99	6-7.5, 8.5-10, 11-12.5	32	S0
CC-B-101	8.5-10, 11-12.5	482	S1
CC-B-102	6-7.5, 8.5-10, 11-12.5	ND	S0
CC-B-104	6-7.5, 8.5-10	ND	S0
CC-B-107	11-12.5, 13.5-15, 18.5-20	108	S0
CC-B-109	8.5-10, 11-12.5, 13.5-15	14	S0
CC-B-110	8.5-10, 11-12.5	10	S0

ND = No Detection

¹ ACI 318 specifies the following for Sulfate Exposure Category:

Category	Severity	Class	Dissolved Sulfate (SO ₄), ppm
S Sulfate	Not Applicable	S0	SO ₄ < 150
	Moderate	S1	150 ≤ SO ₄ ≤ 1500
	Severe	S2	1500 ≤ SO ₄ ≤ 10,000
	Very Severe	S3	SO ₄ > 10,000

(NO TEXT FOR THIS PAGE)



Appendix D - Common Fill Laboratory Testing



(NO TEXT FOR THIS PAGE)

Great Water Alliance - Contract Package 5, Return Flow Pipeline Stations 2000+00 to 3000+00

Common Fill Laboratory Testing Results and Suitability for Use as Common Fill

Boring No.	Depth (feet)	Grain Size Distribution			Atterberg Limits			Organic Content	Suitable for Common Fill? ⁵
		P ₁₀	P ₆₀	P ₂₀₀	LL	PL	PI		
Specification		50-100	20-90	0-20	≤40		≤20		
CC-B-70	3.5-5							6.1	No ³
CC-B-72	1-2.5, 3.5-5	37.5	20.0	15.3					No ¹
CC-B-73	1-2.5, 3.5-5				48	23	25		No ²
CC-B-93	6-7.5, 8.5-10	75.4	54.6	37.5					No ¹
CC-B-103	1-2.5, 3.5-5, 6-7.5				33	14	19		Yes
CC-B-105	6-7.5, 8.5-10, 11-12.5	46.1	23.7	14.6					No ¹
CC-B-106	1-2.5, 3.5-5				49	19	30		No ²
CC-B-107	3.5-5, 6-7.5				38	17	21		No ²
CC-B-110	6-7.5, 8.5-10				31	20	11		Yes

Values which do not meet the specifications indicated in the Draft Backfill Specifications in **Appendix 4** are shown in bold.

¹ Grainsize distribution does not meet the Draft Backfill Specifications, which generally represent a fairly well graded granular material.

² Atterberg Limits do not meet the Draft Backfill Specifications, which generally represent lower plasticity cohesive soils.

³ Soils with organic contents of about 5 percent or greater are considered to be "organic" and not suitable for reuse as backfill.

⁴ Generally considered to be suitable for reuse as Common Fill; however, sorting of any concentrated areas of organics must be performed.

⁵ Based on the Draft Backfill Specifications, for the soils at the approximate depths tested. Soils outside of the depths tested may not meet the specifications.

(NO TEXT FOR THIS PAGE)



Appendix E - Approximate Areas of Recommended Geotextile Placement



(NO TEXT FOR THIS PAGE)

Approximate Areas of Recommended Geotextile Placement
Great Water Alliance - Contract Package 5, Return Flow Pipeline Stations 2000+00 to 3000+00

Approximate Stationing**	Approximate Length (ft)	Boring(s) in Area	Issues	Recommended Geotextile Area Placement
2295+30 to 2302+50	720	CC-B-70	Organic Fill Above Pipe Depth	Along Trench Sides Above Bedding
488+60 to 497+00	840	CC-B-91	Wet Silty Sand Below Groundwater	Surrounding Bedding on All Sides
471+30 to 480+20	890	CC-B-93	Wet Silty Sand Below Groundwater	Surrounding Bedding on All Sides
455+60 to 463+30	770	CC-B-95	Wet Silty Sand Below Groundwater	Surrounding Bedding on All Sides
408+15 to 416+35	820	CC-B-101	Wet Silt Below Groundwater	Surrounding Bedding on All Sides
392+25 to 400+05	780	CC-B-103	Soft Lean Clay/Silty Clay Fill Above Pipe Depth	Along Trench Sides Above Bedding
376+55 to 392+25	1570	CC-B-104, 105	Wet Medium Sand or Silty Sand Below Groundwater	Surrounding Bedding on All Sides
346+25 to 353+95	770	CC-B-109	Wet Sandy Silt Below Groundwater	Surrounding Bedding on All Sides
338+50 to 346+25	775	CC-B-110	Soft Natural Lean Clay Above Pipe Depth	Along Trench Sides Above Bedding

* Plan and Profile not yet available in these areas

** Stationing was approximated by estimating that poor conditions at one boring will end at about the midpoint between this boring and the adjacent boring with suitable conditions. The stationing also excludes any areas of trenchless excavation.

Notes: Any unsuitable soils present below the utility bearing elevation must be over-excavated and replaced with additional bedding materials as recommended in the geotechnical report. A representative of the project geotechnical engineer should be present during construction to help determine necessary over-excavation depths and appropriate backfill methods and materials. The above recommended areas for a geotextile surrounding the bedding have been estimated based on locations where the pipe is anticipated to be below the groundwater and the following relationships between the bedding and adjacent soils are **not** met: $D_{15}^B/D_{85}^A \leq 5$, $D_{50}^B/D_{50}^A \leq 25$, and $D_{15}^B/D_{15}^A \leq 20$, where "B" represents the bedding material, "A" represents the adjacent in-situ soils, and D_x is the diameter for which x percent is finer by weight. Where these relationships are met, migration of fines is not considered to be an issue. In general, where the bedding material consists of ¾-inch limestone chips meeting the gradation requirements of the Standard Specifications for Sewer and Water Construction in Wisconsin Table 33, in-situ soils not estimated to meet the above relationships include fine to medium sand, silty sand, and silt. These relationships are based on the Army Corps of Engineers as provided in their Filter Experiments and Design Criteria Technical Memorandum No. 3-360.

(NO TEXT FOR THIS PAGE)



Appendix F - General Notes



(NO TEXT FOR THIS PAGE)

GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System (USCS), AASHTO 1988 and ASTM designations D2487 and D-2488 are used to identify the encountered materials unless otherwise noted. Coarse-grained soils are defined as having more than 50% of their dry weight retained on a #200 sieve (0.075mm); they are described as: boulders, cobbles, gravel or sand. Fine-grained soils have less than 50% of their dry weight retained on a #200 sieve; they are defined as silts or clay depending on their Atterberg Limit attributes. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size.

DRILLING AND SAMPLING SYMBOLS

SFA: Solid Flight Auger - typically 4" diameter flights, except where noted.	☒ SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
HSA: Hollow Stem Auger - typically 3 1/4" or 4 1/4" I.D. openings, except where noted.	■ ST: Shelby Tube - 3" O.D., except where noted.
M.R.: Mud Rotary - Uses a rotary head with Bentonite or Polymer Slurry	▮ RC: Rock Core
R.C.: Diamond Bit Core Sampler	↓ TC: Texas Cone
H.A.: Hand Auger	☞ BS: Bulk Sample
P.A.: Power Auger - Handheld motorized auger	☒ PM: Pressuremeter
	CPT-U: Cone Penetrometer Testing with Pore-Pressure Readings

SOIL PROPERTY SYMBOLS

N: Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. Split-Spoon.
N ₆₀ : A "N" penetration value corrected to an equivalent 60% hammer energy transfer efficiency (ETR)
Q _u : Unconfined compressive strength, TSF
Q _p : Pocket penetrometer value, unconfined compressive strength, TSF
w%: Moisture/water content, %
LL: Liquid Limit, %
PL: Plastic Limit, %
PI: Plasticity Index = (LL-PL), %
DD: Dry unit weight, pcf
▼, ▼, ▼ Apparent groundwater level at time noted

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Relative Density	N - Blows/foot
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	50 - 80
Extremely Dense	80+

ANGULARITY OF COARSE-GRAINED PARTICLES

Description	Criteria
Angular:	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular:	Particles are similar to angular description, but have rounded edges
Subrounded:	Particles have nearly plane sides, but have well-rounded corners and edges
Rounded:	Particles have smoothly curved sides and no edges

GRAIN-SIZE TERMINOLOGY

Component	Size Range
Boulders:	Over 300 mm (>12 in.)
Cobbles:	75 mm to 300 mm (3 in. to 12 in.)
Coarse-Grained Gravel:	19 mm to 75 mm (3/4 in. to 3 in.)
Fine-Grained Gravel:	4.75 mm to 19 mm (No.4 to 3/4 in.)
Coarse-Grained Sand:	2 mm to 4.75 mm (No.10 to No.4)
Medium-Grained Sand:	0.42 mm to 2 mm (No.40 to No.10)
Fine-Grained Sand:	0.075 mm to 0.42 mm (No. 200 to No.40)
Silt:	0.005 mm to 0.075 mm
Clay:	<0.005 mm

PARTICLE SHAPE

Description	Criteria
Flat:	Particles with width/thickness ratio > 3
Elongated:	Particles with length/width ratio > 3
Flat & Elongated:	Particles meet criteria for both flat and elongated

RELATIVE PROPORTIONS OF FINES

Descriptive Term	% Dry Weight
Trace:	< 5%
With:	5% to 12%
Modifier:	>12%

GENERAL NOTES

(Continued)

CONSISTENCY OF FINE-GRAINED SOILS

<u>Q_u - TSF</u>	<u>N - Blows/foot</u>	<u>Consistency</u>
0 - 0.25	0 - 2	Very Soft
0.25 - 0.50	2 - 4	Soft
0.50 - 1.00	4 - 8	Firm (Medium Stiff)
1.00 - 2.00	8 - 15	Stiff
2.00 - 4.00	15 - 30	Very Stiff
4.00 - 8.00	30 - 50	Hard
8.00+	50+	Very Hard

MOISTURE CONDITION DESCRIPTION

<u>Description</u>	<u>Criteria</u>
Dry:	Absence of moisture, dusty, dry to the touch
Moist:	Damp but no visible water
Wet:	Visible free water, usually soil is below water table

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term</u>	<u>% Dry Weight</u>
Trace:	< 15%
With:	15% to 30%
Modifier:	>30%

STRUCTURE DESCRIPTION

<u>Description</u>	<u>Criteria</u>	<u>Description</u>	<u>Criteria</u>
Stratified:	Alternating layers of varying material or color with layers at least ¼-inch (6 mm) thick	Blocky:	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Laminated:	Alternating layers of varying material or color with layers less than ¼-inch (6 mm) thick	Lensed:	Inclusion of small pockets of different soils
Fissured:	Breaks along definite planes of fracture with little resistance to fracturing	Layer:	Inclusion greater than 3 inches thick (75 mm)
Slickensided:	Fracture planes appear polished or glossy, sometimes striated	Seam:	Inclusion 1/8-inch to 3 inches (3 to 75 mm) thick extending through the sample
		Parting:	Inclusion less than 1/8-inch (3 mm) thick

SCALE OF RELATIVE ROCK HARDNESS

<u>Q_u - TSF</u>	<u>Consistency</u>
2.5 - 10	Extremely Soft
10 - 50	Very Soft
50 - 250	Soft
250 - 525	Medium Hard
525 - 1,050	Moderately Hard
1,050 - 2,600	Hard
>2,600	Very Hard

ROCK BEDDING THICKNESSES

<u>Description</u>	<u>Criteria</u>
Very Thick Bedded	Greater than 3-foot (>1.0 m)
Thick Bedded	1-foot to 3-foot (0.3 m to 1.0 m)
Medium Bedded	4-inch to 1-foot (0.1 m to 0.3 m)
Thin Bedded	1¼-inch to 4-inch (30 mm to 100 mm)
Very Thin Bedded	½-inch to 1¼-inch (10 mm to 30 mm)
Thickly Laminated	1/8-inch to ½-inch (3 mm to 10 mm)
Thinly Laminated	1/8-inch or less "paper thin" (<3 mm)

ROCK VOIDS

<u>Voids</u>	<u>Void Diameter</u>
Pit	<6 mm (<0.25 in)
Vug	6 mm to 50 mm (0.25 in to 2 in)
Cavity	50 mm to 600 mm (2 in to 24 in)
Cave	>600 mm (>24 in)

GRAIN-SIZED TERMINOLOGY

(Typically Sedimentary Rock)	
<u>Component</u>	<u>Size Range</u>
Very Coarse Grained	>4.76 mm
Coarse Grained	2.0 mm - 4.76 mm
Medium Grained	0.42 mm - 2.0 mm
Fine Grained	0.075 mm - 0.42 mm
Very Fine Grained	<0.075 mm

ROCK QUALITY DESCRIPTION



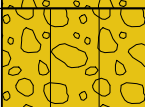
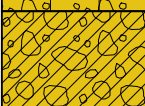


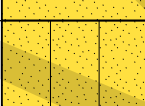


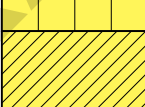
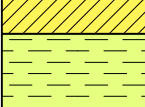



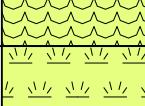
<u>Rock Mass Description</u>	<u>RQD Value</u>
Excellent	90 - 100
Good	75 - 90
Fair	50 - 75
Poor	25 - 50
Very Poor	Less than 25

DEGREE OF WEATHERING

Slightly Weathered:	Rock generally fresh, joints stained and discoloration extends into rock up to 25 mm (1 in), open joints may contain clay, core rings under hammer impact.
Weathered:	Rock mass is decomposed 50% or less, significant portions of the rock show discoloration and weathering effects, cores cannot be broken by hand or scraped by knife.
Highly Weathered:	Rock mass is more than 50% decomposed, complete discoloration of rock fabric, core may be extremely broken and gives clunk sound when struck by hammer, may be shaved with a knife.

SOIL CLASSIFICATION CHART

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

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